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EEG Power Spectrum Analysis to the Human Impact of  
Epilepsy Disease by using Fast Fourier Transform.

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M.Sc. Thesis

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# EEG Power Spectrum Analysis to the Human Impact of Epilepsy Disease by using Fast Fourier Transform

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Al – Quds University  
Deanship of Graduate Studies  
Physics Department



### Thesis Approval

**EEG Power Spectrum Analysis to the Human Impact of Epilepsy  
Disease by using Fast Fourier Transform.**

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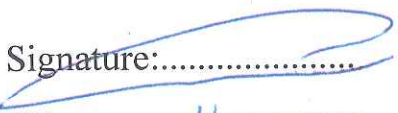
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Master thesis submitted and accepted, date 12 /5 /2018

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Jerusalem – Palestine

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## Dedication

I dedicate this thesis to my family, especially, to my father, my mother and my wife for their patience and understanding.

I also dedicate this work to many special friends in my life who always supported me and gave me the identity for being who I am. Special dedications go to my teachers, I will always appreciate every nice and encouraging word have been said to me by my teachers for my entire life.

Ashraf Muhammed Abid Aleian

Declaration

I certify that this thesis submitted for the degree of master, is the result of my own research, except where otherwise acknowledged, and that this study has not been submitted for a higher degree or institution.

Signed:

A handwritten signature in blue ink, appearing to be 'Ashraf Muhammed Abid Aleian', written over a horizontal line.

Ashraf Muhammed Abid Aleian

Date: 12/5/2018

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I would like to take this opportunity to thank all those people who have contributed to this study and helped me complete this thesis.

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## Abstract

This study aims to determine the effect of epilepsy disease on the five frequency bands of the human brain waves, namely: Alpha, Beta, Theta, Delta, and Gamma. Thirty five subjects who suffer from epilepsy disease participated in this study, and their electroencephalography (EEG) signals continuously recorded with a computer-based data acquisition system (Nicolet NicVue). Power spectral analysis was conducted using Fast Fourier Transform (FFT) to extract the power of the above five frequency bands. It was concluded that for theta sub-bands, there was a higher mean power in most channels, whereas for gamma sub-band, there was a lower mean power in most channels.

The results of EEG can help doctors and specialists to make the right diagnosis and to decide on the best treatment for patients who suffer from epileptically discords, so the study recommended highly to use EEG since the findings could give an explanation of these disorders.

Table of contents

B.Sc : Applied electronics, Palestine Polytechnic University, Palestine..... ii

**Dedication .....iv**

**Declaration.....i**

**Acknowledgements .....ii**

**Abstract..... iii**

**Table of contents .....iv**

**List of tables.....خطأ! الإشارة المرجعية غير معروفة.**

**List of Figures: ..... v**

**List of abbreviations: .....vi**

**Chapter One ..... 1**

    Introduction..... 1

    1.1 Overview..... 1

    1.2 Objectives of the thesis .....2

    1.3 Scope of work .....2

    1.4 Organization of thesis .....3

**Chapter Two.....4**

    Literature Review.....4

    2.1 Introduction.....4

    2.2 Epilepsy.....4

    2.3 Seizures .....5

    2.4 Epilepsy diagnosis .....5

    2.5 Electroencephalography (EEG) .....5

2.6 EEG Frequency Bands .....	7
2.7 Power spectral density (PSD) estimation.....	9
2.7.1. Fast Fourier transform.....	10
2.8 Applications of (PSD) estimation in epilepsy.....	11
<b>Chapter Three .....</b>	<b>16</b>
Methodology .....	16
3.1 Introduction.....	16
3.2 Subjects .....	16
3.3 Experimental protocol.....	16
3.4 EEG Recording .....	19
3.5 EEG signal processing .....	20
<b>Chapter Four.....</b>	<b>21</b>
Results and Discussion .....	21
4.1 Introduction.....	21
4.2 Results.....	21
4.2.1 Epilepsy group: .....	21
4.2.2 The Normal group (People who do not have Epilepsy):.....	25
4.3 Discussion .....	29
4.4 Summary .....	30
<b>Chapter Five .....</b>	<b>31</b>
Conclusions and Future Work .....	31
5.1 Introduction.....	31
5.2 Future Work .....	32
6. References.....	33

**10. Susana Blanco, Arturo Garay, and Diego Coulombie. (2013). "**

7. Appendix.....	37
Epilepsy Group .....	37
<b>ملخص.....</b>	<b>126</b>

List of Figures:

<b>Figure No.</b>	<b>Figure Title</b>	<b>page</b>
1	EEG machine (20)	6
2	EEG signal (22)	7
3	Delta wave of second (22)	7
4	Theta wave of second (22)	8
5	Alpha wave of second (22)	8
6	Beta wave of second (22)	9
7	Gamma wave of second (22)	9
8	Flow chart of EEG waves classification procedure	18
9	Electrode positions on the scalp (46, 47)	19
10	The power spectral density of the five frequency bands at the electrode position O1 for epilepsy group	21
11	The power spectral density of the five frequency bands at the electrode position F3 for epilepsy group	22
12	The power spectral density of the five frequency bands at the electrode position F4 for epilepsy group	22
13	The power spectral density of the five frequency bands at the electrode position C3 for epilepsy group	23
14	The power spectral density of the five frequency bands at the electrode position P3 for epilepsy group	23
15	power spectral density of the five frequency bands at the electrode position O2 for epilepsy group	24
16	The power spectral density of the five frequency bands at the electrode position C4 for epilepsy group	24
17	The power spectral density of the five frequency bands at the electrode position P4 for epilepsy group	25
18	The power spectral density of the five frequency bands at the electrode position O1 for normal group	25
19	The power spectral density of the five frequency bands at the electrode position F3 for normal group	26
20	The power spectral density of the five frequency bands at the electrode position F4 for normal group	26
21	power spectral density of the five frequency bands at the electrode position C3 for normal group	27
22	The power spectral density of the five frequency bands at the electrode position P3 for normal group	27
23	The power spectral density of the five frequency bands at the electrode position O2 for normal group	28
24	The power spectral density of the five frequency bands at the electrode position C4 for normal group	28
25	The power spectral density of the five frequency bands at the electrode position P4 for normal group	29

List of abbreviations:

<b>abbreviation</b>	<b>Abbreviation representation</b>
EEG	Electroencephalography.
PSD	Power Spectral Density.
SDE	Spectral Density Estimation.
SVM	Support Vector Machine.
iEEG	Intracranial EEG.
HRV	Heart Rate Variability.
nuHF	Normalized Unit of High-Frequency.
MCI	Mild Cognitive Impairment.
MMSE	Mini-Mental State Examination.
AD	Alzheimer's Disease.
ERPs	Event-Related Potentials.
ERPCOH	Event-Related Phase Coherence.
PSI	Phase Synchronization Index.
FFT	Fast Fourier Transform.

List of Appendices :

<b>Appendix No.</b>	<b>Appendix Title</b>	<b>page</b>
1	Epilepsy Group	37
2	Normal Group	110
3	Mean power and standard deviations of frequency bands power of 6 normal subject	125

# Chapter One

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## Introduction

### 1.1 Overview

Recently, seizures are viewed as electromagnetic discharges in all mammalian species, while in human brain; seizures are viewed in predisposed individuals, which related in part to putative genetic factors and cause neurological disorders. Statistical data showed that around fifty millions people with epilepsy are reported world-wide. This massive number urged scientists and health centers to study this critical phenomenon that needs a deep concern to be cured (1). While the official incidence for epilepsy is 7.7 per 100 000 people per year in Palestine according to the official estimation in 2016 of Palestinian Ministry of Health (2). A previous review on epilepsy from Arab world estimated the prevalence of epilepsy to be 2.3/1000(3).

Studying epilepsy is beset with difficulties accurate diagnosis and case ascertainments remain major problems, because epilepsy is only a symptom of many disparate causative entities. Confident diagnosis or exclusion in all cases of seizures is difficult because seizure types vary, unusual behavior and blank spells may not be recognized as seizures, there may be no accompanying neurological signs and if an eyewitness account is lacking, the diagnosis may not be made at all. Other conditions are readily confused with epilepticseizures. The most frequently occurring non-epileptic events requiring distinction and exclusion are pseudo seizures and syncope (4). It is also known that the human body stores external electrical charges which are caused by clothing carrying electric current, especially woolen clothes overuse of electric tools and in some cases have the effect of air humidity and the excessive storage of charging electrons may cause extra charges in the brain. Therefore, the increase of charges in the brain may produce epilepsy(5).

EEG is a technique for recording electrical activity of the brain signals that can be used to diagnose the neurological disorders such as epilepsy, Alzheimer and Parkinson diseases. Epilepsy occurs irregularly and unpredictably due to temporary electrical disturbance of

the brain. Information content of EEG signals is essential for detection of many problems in the brain (6).

This study will extract the five sub-signals from EEG signals using fast fourier transform technique in order to calculate the power spectral density (PSD), which may give support to medical doctors in decision making and improve the diagnosis of epilepsy.

## **1.2 Objectives of the thesis**

The main objective of this research is to find the effects of epilepsy disease on the five frequency bands (delta, theta, alpha, beta and gamma).

To achieve this goal, the study will discuss the following issues:

- 1- Use the Electroencephalography (EEG) for diagnosing Epilepsy in human brain.
- 2- Use the fast Fourier transform analysis to extract the power spectrum density of the five frequency bands.

## **1.3 Scope of work**

1- Two groups of subjects were recruited in this study, group 1 (Epilepsy group) which contains thirty fivesubjectsfrom both males and females of different ages who suffer from epilepsy disease,while group 2 (Normal group) have six healthy subjects who are free from epilepsy or any neurological disorders.

2- The five frequency power bands: delta, theta, alpha, beta and gamma were studied and analyzed.

3- The power spectrum analysis was performed using FFT.

4- The EEG recording was performed in supine condition.

## **1.4 Organization of thesis**

This thesis is divided into 5 chapters including: introduction, literature review, methodology, results and discussion, and conclusions.

The introduction chapter, contains general overview of the study, the objectives of the thesis and the scope of the work.

Chapter two introduces definitions of epilepsy, seizures, epilepsy diagnosis, EEG, its frequency bands, in addition to power spectral density (PSD) estimation. Finally the applications of (PSD) are introduced.

Chapter three introduces, subjects, EEG data acquisition & experimental protocol and EEG signal processing, finally the tools & instruments are introduced.

Chapter four presents the results of the power spectral analysis of the five frequency bands, and discusses these findings from the analytical point of view which related to bands of frequencies that have been found. A comparison between Epilepsy group and Normal group predicted.

Chapter five talks about the conclusions and recommendations for proposed future work to develop these types of the study area.

## Literature Review

### 2.1 Introduction

Epilepsy is a common brain disorder that, according to an estimate of the World Health Organization, who affects almost 50 million people around the world (7). Epilepsy is characterized by the recurrent and sudden incidence of epileptic seizures which can lead to dangerous and possibly life-threatening situations (8). In Arab countries it was estimated that an incidence of 174 per 100,000 persons in 2001 was reported in a hospital-based study from Qatar. Prevalence ranged between 0.9/1,000 in Sudan and 6.5/1,000 in Saudi Arabia; a median of 2.3/1,000 in the Arab world. An approximate 724,500 people with epilepsy live in the Arab world (9).

### 2.2 Epilepsy

Epilepsy is considered by some authors as a symptom that responds to different neurological disorders. These disorders may be strokes, head traumas, brain malformations, and the effect of neurotoxin substances among others. All of them are discontinuities that affect normal brain activity, enabling the creation of conditions for the occurrence of the attack. The mechanism of the attack is not clear yet, although there are several hypotheses based on the incorrect communication between neurons (10). It has been known that epilepsy is a group of neurological diseases that has been characterized by epileptic seizures (11). Epilepsy can often be confirmed with an electroencephalogram (EEG), at this point, Longo (2012) found that a normal test does not rule out the condition (12). Additionally, carrying out the diagnosis involves determining if any other cause of seizures is present, such as alcohol withdrawal or electrolyte problems, this may be done by imaging the brain and performing blood tests (12). Even though, the causes of most cases of epilepsy is still unknown, although some scholars considered that epilepsy is a disorder caused by traumatic brain injury stroke, brain tumors, and substance use disorders. Longo investigated the relationship of genetic causes and mutations, his findings showed that they are directly linked to only a small proportion of cases. The diagnosis typically involves ruling out other conditions that might cause similar symptoms (i.e., fainting) (12).

## **2.3 Seizures**

Seizures are the result of a transient and unexpected electrical disturbance of the brain and excessive neuronal discharge of the electrical activity of the brain (13). Epileptic seizures and symptoms vary between brief and undetectable symptoms to long periods of vigorous shaking of human nerve system (14). Chang and Lowenstein (2003) mentioned that seizures tend to recur, and have no immediate underlying causes (15). Fisher (2014) and his colleagues concluded that seizures that occur due to a specific cause are not deemed to represent epilepsy (16). Others, like Fisher and his colleagues (2005) suggested that epileptic seizures are the result of excessive and abnormal cortical nerve cell activity in the brain (17).

## **2.4 Epilepsy diagnosis**

There are some medical disorders that cause symptoms similar to epilepsy, this can make epilepsy difficult to diagnose. An epilepsy specialist will make a diagnosis based mainly on the appeared signs and symptoms.

They may ask patients to have some tests at hospital or medicare labs. These include EEG tests and computerized tomography(CT) or magnetic resonance imaging(MRI) scans. None of these tests can prove that the person do or do not have epilepsy, but they may give useful information. This includes the possible cause of epilepsy and the type of seizures that the patient may suffer from (18).

## **2.5 Electroencephalography (EEG)**

EEG is “an electroencephalogram test that measures and records the electrical activity of the human brain” where, special sensors (electrodes) are attached to patient's head and hooked by wires to a computer system. The computer records brain's electrical activity on a screen or on a paper as wavy lines. Certain conditions, such as seizures, can be seen by the changes in the normal pattern of the brain's electrical activity (19).

The electroencephalogram (EEG) may be done to:

- \* Diagnose epilepsy and to see what types of seizures are occurring, EEG is the most useful and important test in confirming the diagnosis of epilepsy.

- \* Check for problems with loss of consciousness or dementia.
- \* Help to find out a person's chance of recovery after a change in consciousness.
- \* Find out if a person suffers from a coma or brain-dead.
- \* Study sleep disorders such as narcolepsy.
- \* Watch the brain activity while a person is receiving general anesthesia during brain surgery.
- \* Help to find out if a person has a physical problem (problems in the brain, spinal cord, or nervous system) or a mental health problem (19).



Figure 1. EEG machine (20).

The EEG recording shows five frequency bands that are clinically relevant. Namely: delta , theta, alpha, beta and gamma (21).

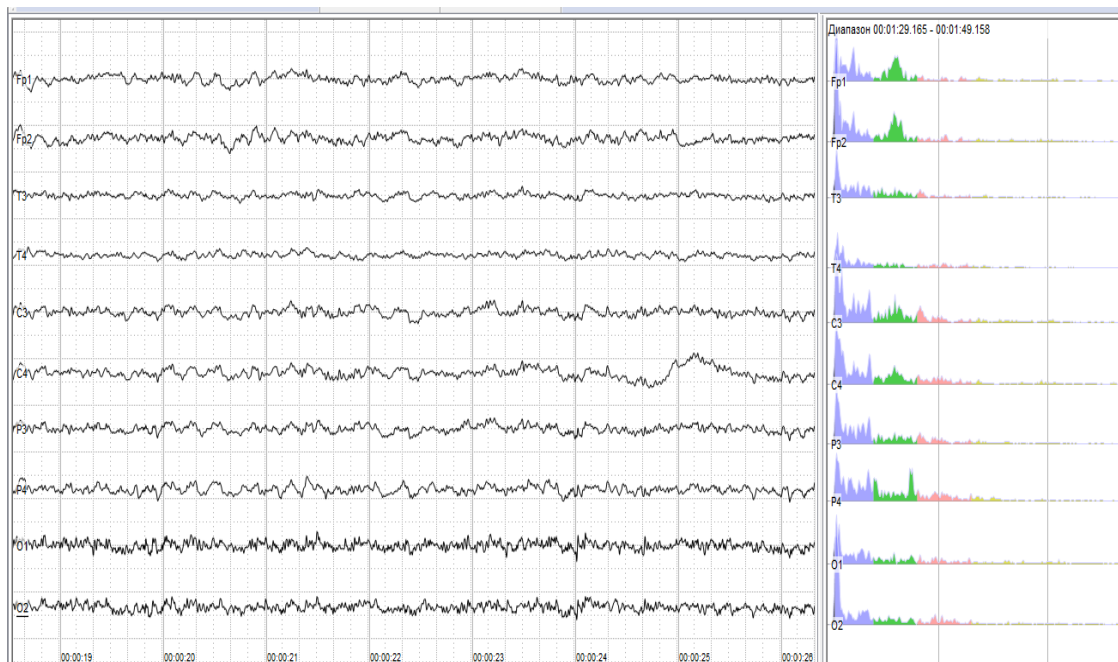


Figure 2. EEG signal (22).

## 2.6 EEG Frequency Bands

Brainwave frequency is measured in Hertz (cycles per second) and most EEG researchers rely mainly on the band activity outlined below:

**Delta** is the frequency range between (0 and 4) Hz. It tends to be the highest in amplitude and the slowest of all waves. It is noticed normally in adults in slow wave sleep. It is also noticed normally in babies (23).

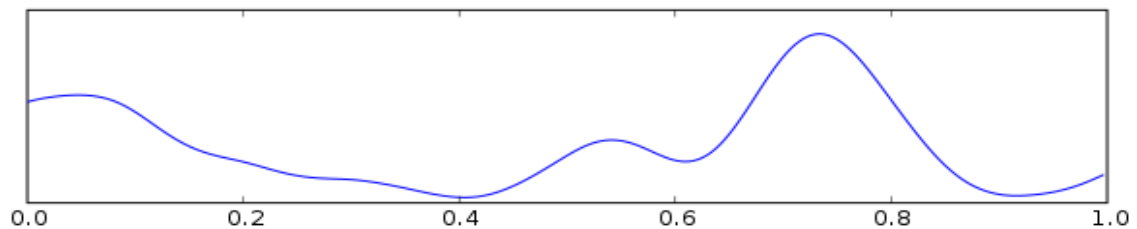


Figure 3. Delta wave of second (22).

**Theta** is the frequency range between (4 and 7) Hz. It is seen normally in young children. It may be seen in drowsiness or arousal in older children and adults. It can also be seen in cases of meditation. Excess theta for age represents abnormal activity (24).

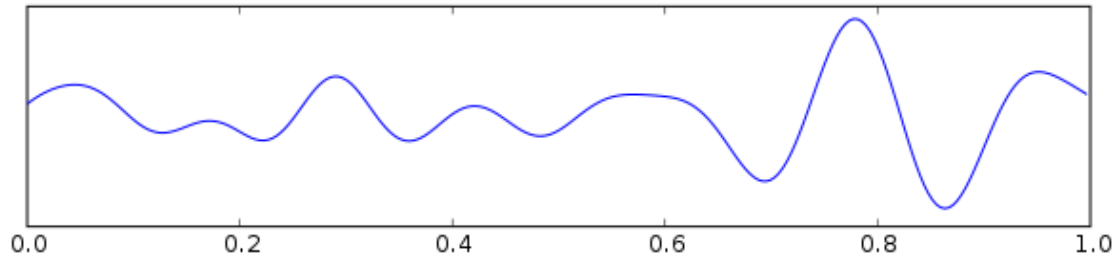


Figure 4. Theta wave of second (22).

**Alpha** is the frequency that ranges between (7 and 14) Hz. Which seen in the posterior regions of the head on both sides and is higher in amplitude on the dominant side. It emerges when closing of the eyes and while relaxation and it attenuates with eye opening or mental exertion (25, 26).

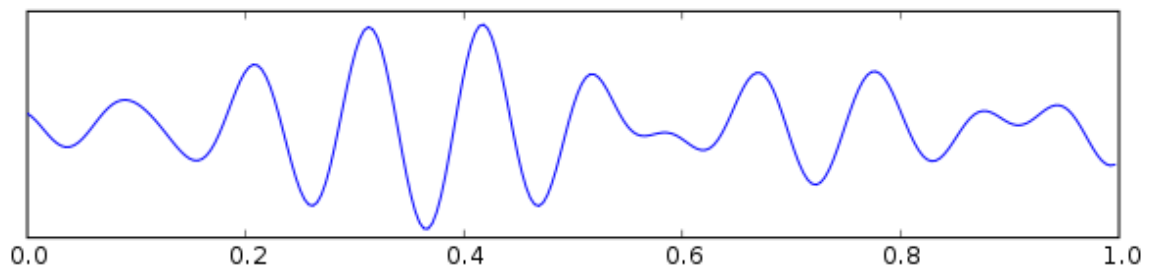


Figure 5. Alpha wave of second (22).

**Beta** is the frequency that ranges between (15 and about 30) Hz. It is seen usually on both sides in symmetrical distribution and is most evident frontally. Beta activity is closely linked to motor behavior and is generally attenuated during active movements. Low amplitude beta with multiple and varying frequencies is often associated with active, busy or anxious thinking and active concentration (27).

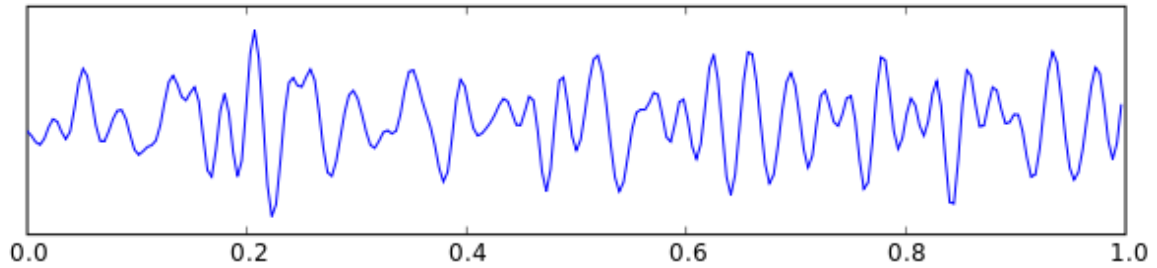


Figure 6. Beta wave of second (22).

**Gamma** is the frequency range approximately between (30 and 100) Hz. Gamma rhythms are thought to represent the binding of different populations of neurons together into a network for the purpose of carrying out a certain cognitive or motor function (28).

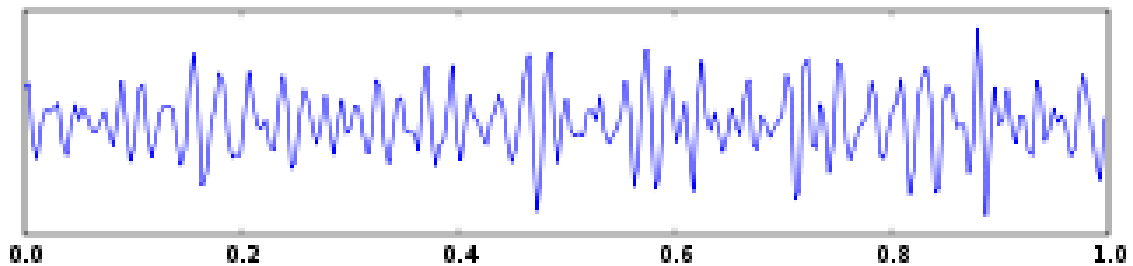


Figure 7. Gamma wave of second (22).

## 2.7 Power spectral density (PSD) estimation

Power spectral density (PSD) analysis is a method for evaluating the distribution of power in a signal over a range of frequencies (29). PSD is commonly used to determine levels of brain activity. EEG recordings help to quantitatively assess the power of each frequency observed in both conscious and unconscious states. Many other techniques for spectral estimation have been developed to mitigate the disadvantages of the basic periodogram.

These techniques can generally be divided into non-parametric and parametric methods(30):

- The non-parametric approaches explicitly estimate the covariance or the spectrum of the process without assuming that the process has any particular structure. Some of the most common estimators in use for basic applications (e.g. Welch's method, Periodogram, Bartlett's method, Multilayer, Least-squares spectral analysis, Non-

uniform discrete Fourier transform, Singular spectrum analysis, and Short-time Fourier transform) are non-parametric estimators closely related to the periodogram (30).

- While, the parametric approaches assume that the underlying stationary stochastic process has a certain structure that can be described using a small number of parameters (for example Autoregressive (AR) estimation, moving average (MA) estimation, Autoregressive moving average (ARMA) estimation, and Maximum entropy spectral estimation) (30).

In these two approaches, the task is to estimate the parameters of the model that describes the stochastic process. In practice, nearly all software and electronic devices that generate frequency spectra utilize a discrete Fourier transform (DFT), which operates on samples of the signal, and which provides a mathematical approximation to the full integral solution. The DFT is almost invariably implemented by an efficient algorithm called fast Fourier transform (FFT) (31). In this research we used the Fast Fourier transform (FFT) method to calculate the power spectral density to determine the levels of brain activity in EEGs to quantitatively assess the power of each frequency observed in neurological brain states of delta, theta, alpha, beta, and gamma frequencies(29).

**2.7.1. Fast Fourier transform** (FFT) is an efficient algorithm for computing the discrete Fourier transform (DFT) of a sequence; it is not a separate transform. It is particularly used in area such as signal processing, where its uses range from filtering and frequency analysis to power spectrum estimation. Computation using FFT of each level gives an indication to the frequencies about the bands (32). (FFT) samples a signal over a period of time (or space) and divides it into its frequency components. These components are single sinusoidal oscillations at distinct frequencies each with their own amplitude and phase. An FFT algorithm computes the discrete Fourier transform (DFT) of a sequence, or its inverse (IFFT). Fourier analysis converts a signal from its original domain to a representation in the frequency domain and vice versa. An FFT rapidly computes such transformations by factorizing the DFT matrix into a product of sparse (mostly zero) factors. FFT are widely used for many applications in engineering, science, and mathematics. In 1994, Gilbert Strang described the FFT as "the most important numerical algorithm of our lifetime" and it was included in top 10 Algorithms of 20th Century by the IEEE journal computing in Science & Engineering (33).

FFT is very important for many reasons that efficient computation of this has emerged as a well analyzed topic for decades. To determine the FFT algorithm the following equation is used (34):

$$X^{(N)}(k) = \sum_{n=0}^{N-1} x(n)e^{-j2\pi kn/N}, \quad k = 0, 1, \dots, N-1 \dots\dots\dots 1$$

Superscript (N) is to show the length of DFT for each value of k, computation of X(k) requires N= Complex multiplications, N-1= Complex additions.

## 2.8 Applications of (PSD) estimation in epilepsy

Many scholars used PSD to determine epilepsy disorder in human brain, various results had been seen, and while most of them guaranteed that this method is the proper one to investigate epilepsy disorder.

Samanwoy et al. (2007) aimed to analyze EEG and to detect seizure and epilepsy. This methodology was applied to three different groups of EEG signals: healthy subjects, epileptic subjects during a seizure-free interval; and epileptic subjects during a seizure. It was concluded that for beta and gamma sub-bands, there was a higher frequency, the correlation dimension (CD) differentiates between the three groups, whereas for alpha sub-band there was a lower frequency, the largest Lyapunov exponent (LLE) differentiates between the three groups (35).

Akin, et al. (2001) aimed to analyze EEG signals and diagnose the epileptic seizures directly by using wavelet transform. EEG signals are separated into  $\delta$ ,  $\theta$ ,  $\alpha$ , and  $\beta$  spectral components by using wavelet transform. These spectral components are applied to the inputs and are trained to give three outputs to signify the health situation of the patients. Depending on these sub-frequencies an artificial neural network has been developed and trained. The accuracy of the neural network outputs is too high (97% for epileptic case, 98% for healthy case, and 93% for pathologic case that have been tested). This means that this neural network identifies the health conditions of the patients approximately as 90%. From this point, we can say that an application of this theoretical study will be helpful for the neurologists when they diagnose the epilepsy (36).

On the other hand, Ganesan and his colleagues (2010) proposed a technique for the automatic detection of the spikes in long term 18 channel human electro-encephalograms

(EEG) with less number of data set. The researchers decomposed the signal on each EEG channel into six sub-bands; they used a non-decimated WT (Wavelet Transform), where each sub-band was analyzed by using a non-linear energy operator in order to detect spikes. It was concluded that the proposed system has good performance in detecting epileptic activities; furthermore, the multistage (multi-resolution approach) found as an appropriate way of automatic classification problems in EEG (37).

Raj Sadaye (2016) proposed a new seizure prediction method by using frequency and amplitude analysis of beta band in EEG signals. In his method, the power spectrum of the beta band of EEG signal was calculated, while the power value generated was then combined with the amplitude of the EEG signal and classified using SVM (Support Vector Machine) to achieve efficient and accurate results. Data of 39 patients in the pre-ictal and inter-ictal period was tested using this method. Analysis using the above stated algorithm on the EEG data has shown successful and promising results (with 70% of accuracy). The research recommended to make more studies that involve using different kernels of SVM as well as removing noisy classifications while detecting pre-ictal signals for a better and accurate prediction of results. Also the algorithm can be improved by incorporating features from alpha, gamma and theta band of EEG signal for predicting epileptic seizures (38).

Melvin Ayala (2011) described a new method for offline seizure detection by using intracranial EEG (iEEG). The proposed method integrated two interrelated steps: the first step concerned in establishing a decisional space on the basis of the interelectrode mean of the spectral power in the gamma frequencies after a thorough evaluation of temporal and frequency-based features, while the second step was constructing an artificial neural network that operated on this decisional space to delineate EEG files that contained seizures from those that did not. The researcher obtained the data from 14 patients who underwent two-stage epilepsy surgery with subdural recordings. The findings showed that 157 files considered from the total, so the researcher selected 35 (21 interictal and 14 ictal) iEEG data files or 22% randomly and used initially in a training phase, while the remaining 122 iEEG data files (or 78%) were then used in the testing phase to assess the merits in selecting gamma power as means to detect a seizure. The results obtained exhibited an accuracy of 95.90%, a sensitivity of 92.59%, and a specificity of 96.84% (39).

XiaoLi X, Polygiannakis J. (2005) argued the important issue for epilepsy diagnosis by analyzing of pre-epileptic seizure through EEG. The researcher mentioned that there exist some methods derived from the dynamics to analyze the pre-epileptic EEG data. It is still necessary to create a novel method to better fit and explain the EEG data for making sense of the seizures' predictability. The researcher proposed a fractal wavelet-based spectral method and applied to analyze EEG recordings from rat experiments. The findings showed that there were three types of patterns founded from the 12 experiments; moreover three typical cases corresponding to the three types of seizures are sorted out and analyzed in details by using the proposed method. The results indicated that fractal wavelet-based method can reveal the characteristic signs of an approaching seizure, which includes the emergence of long-range correlation, the decrease of anti-persistence behavior with time and the decrease of the fractal dimension (40).

Ouyang G. (2007) predicted epileptic seizures by using EEG recordings in real time, the method combined wavelet techniques and nonlinear dynamics. The findings of EEG recordings of rats and humans showed that wavelet-based nonlinear similarity index (WNSI) can track the hidden dynamical changes of brain electrical activity. Particularly, the researcher found that we can obtain the best performance of seizure prediction at the beta (10-30 Hz) frequency band of EEG signals. A possible reason is suggested from the functional connectivity of the brain. The researcher recommended that wavelet technique is very useful to improve the performance of epileptic seizures prediction (41).

Michel Le Van Quyen M. (2005) proposed that there is accumulated evidence that mesial temporal lobe seizures are preceded by a preictal transition that evolves over minutes to hours. A phase-locking measure was estimated using a sliding window analysis on 15 frequency bands (2Hz steps between 0 and 30Hz), for all pairs of EEG channels in the epileptogenic temporal lobe (14-20 channels), over the entire data sets (total analyzed duration 305h). The findings showed that in most of the cases (36 of 52 seizures, i.e. 70%), a specific state of brain synchronization can be observed several hours before the actual seizure. The changes involved both increases and decreases of the synchronization levels, occurring mostly within the 4-15Hz frequency band, which ensures the study prediction that mesial temporal lobe seizures are preceded by a preictal transition that evolves over minutes to hours (42).

Jiang ZY. (2005) investigated the features of (EEG) power and coherence at rest, and during a working memory task of patients with mild cognitive impairment (MCI). The findings showed that all values of the EEG power of MCI patients were higher than those of normal controls at rest and during working memory tasks. Furthermore, the values of EEG power in the theta, alpha-1, alpha-2 and beta-1 bands of patients with MCI were significantly high ( $P < 0.05$ ) in comparison with those of normal controls. Correlation analysis indicated a significant negative correlation between the EEG powers and MMSE (Mini-Mental State Examination) scores. In addition, during working memory tasks, the EEG coherences in all bands were significantly higher in the MCI group in comparison with those in the control group ( $P < 0.05$ ). However, there was no significant difference in EEG coherences between two groups at rest. These findings comprise evidence that MCI patients have higher EEG power at rest, and higher EEG power and coherence during working conditions. It suggests that MCI may be associated with compensatory processes at rest and during working memory tasks. Moreover, failure of normal cortical connections may be exist in MCI patients (43).

Suzuki H. (1996) conducted a comparative study by using quantitative EEG analysis to clarify quantitative characteristics and possible markers of major depression. The subjects included 27 patients with major depression with melancholic features (DSM-III-R) (referred to as depressed group), 21 patients in the state of remission (referred to as remission group) and 17 subjects with no psychiatric disorder (referred to as control group). The findings showed that remission group showed less theta 1 and alpha 2 power in the bilateral frontal regions and less right predominance in alpha 1 power in the parietal regions. The researcher compared with the depressed group, and found that the remission group showed less theta power in the bilateral frontal regions. On the other hand, by comparing with the control group, both the depressed and remission groups showed higher beta 2 power in the bilateral frontal regions (44).

GajicD., DjurovicZ., Di Gennaro S. and Fredrik Gustafson. (2014),described an automated classification of EEG signals for the detection of epileptic seizures using wavelet transform and statistical pattern recognition. The decision making process is comprised of three main stages: (a) feature extraction based on wavelet transform, (b) feature space dimension reduction using scatter matrices, and (c) classification by quadratic classifiers. The proposed methodology was applied on EEG data sets that belong to three subject

groups: a) healthy subjects, b) epileptic subjects during a seizure-free interval, and c) epileptic subjects during a seizure. An overall classification accuracy of 99% was achieved. The results confirmed that the proposed algorithm has a potential in the classification of EEG signals and detection of epileptic seizures, and could thus further improve the diagnosis of epilepsy (45).

## **Methodology**

### **3.1 Introduction**

**This chapter describes the procedures and methodology used to detect and analyze the EEG signals to find the power of the five EEG frequency bands. The subjects information. EEG data acquisition and experimental protocol will be described, in addition to the EEG signal processing and statistical analysis.**

### **3.2 Subjects**

Epilepsy group of thirty five subjects whom suffering from epilepsy were participated in this research, they were between (10-60) years old, and were patients of the mental hospital in Bethlehem, who live in various areas of Palestine. In addition to, normal group of six healthy subjects who are free from epilepsy or any neurological disorders or any problem, were between (18-25) years old.

### **3.3 Experimental protocol**

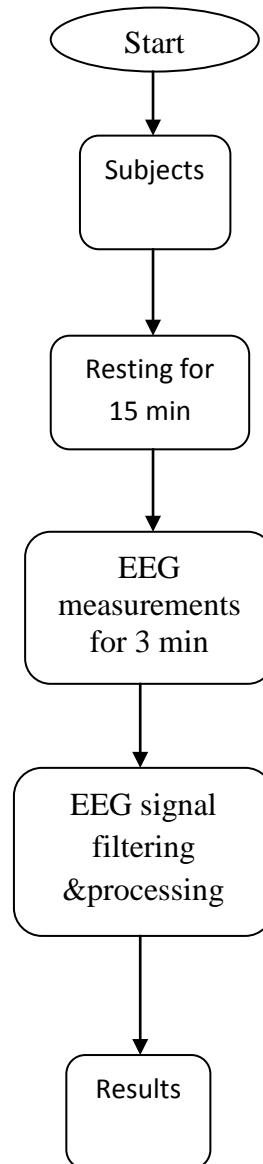
**It is known that brain constantly produces tiny electrical signals, while during an EEG test, electrodes (flat metal discs) are placed on patient's head. The electrodes pick up the electrical signals from the brain and record them on an EEG machine. They neither affect the brain nor do they cause any pain, it only records the electrical signals from the brain on a computer. They look like wavy lines, and these represent the brain wave patterns.**

EEG test can only show brainwave patterns at the time the test is being carried out. At different times, brainwave patterns may be different. Most people have brainwave patterns that look similar to everyone else's. Sometimes, the EEG test shows that a person has different brainwave patterns to other people. These are caused by unusual electrical activity in their brain. They can sometimes indicate that the person has a sign of epilepsy.

Yet, certain precautions had been taken into consideration while performing EEG test:

- 1- Patient's head must be cleaned from all kinds of materials to have correct readings.
- 2- The patient must have breakfast in order to give a correct reading, where in the case of fasting only slow changes are present.
- 3- If the patient is old, he must be treated in a good manner to encourage him to cooperate, and in the case of young patients must be given a medicine to sleep.
- 4- Gel must be spread on all of the hair of the head.
- 5- Wires must be cleaned and right in their fixed place.
- 6- Follow up (NicVue) program and the brain signals to achieve the following steps:
  - a- Enter to the brain diagram and open the file. Then, go to export to choose ASCII and then save the file as a text.
  - b- Load the text file to the Matlab in order to calculate the power spectral density value for each patient.
  - c- Load the power value to the SPSS in order to perform statistical analysis.

The following flowchart (figure 8) clarifies the experimental protocol of this research.



**Figure 8. Flow chart of EEG waves classification procedure**

### 3.4 EEG Recording

During the experiment, EEG signals were continuously recorded with a computer-based (Nicolet NicVue) data acquisition system. To avoid any artifacts due to physical movements, only one static position (supine) is considered.

EEG was recorded with an electrode cap, with electrodes positioned on the participant's head. According to the international 10-20 system of electrode placement, EEG data gathered from the eight electrode positions on the scalp frontal (F3 and F4), Central (C3 and C4), Parietal (P3 and P4) and Occipital (O1 and O2), referring to the linked ear lobe electrode as figure 8 shows these lobes. This method had been taken upon previous studies that used EEG(46, 47).

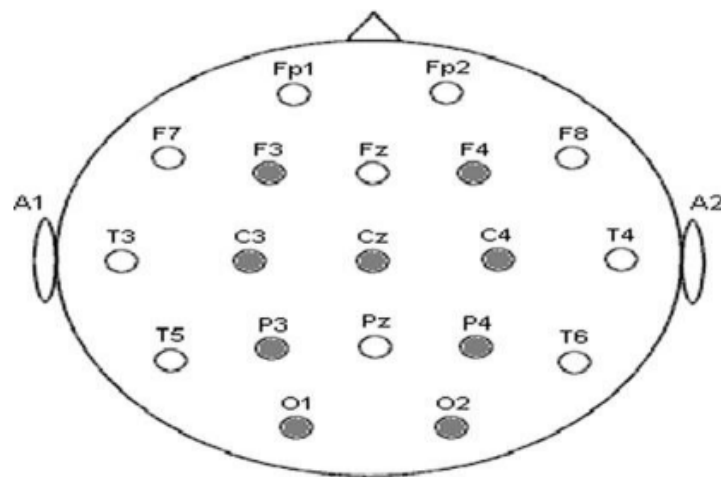


Figure9. Electrode positions on the scalp (46, 47)

### 3.5 EEGsignal processing

The EEG signals were sampled at a rate of 1000 samples/s. As a preliminary step to estimate power spectral density, all signals were band-pass filtered between 1.0 and 100 Hz. Then, a Matlab program was used to estimate the power spectral density of the EEG signals. The mean power (MP) was calculated according to the following equation:

$$MP = \int_{f_l}^{f_h} S_x(f) df \dots\dots\dots 2$$

Where:  $f_h$  and  $f_l$  are its starting and ending frequencies, respectively, from 1 to 100 Hz, with  $S_x(f)$  defining Fast Fourier Transform coefficient at frequency  $f$ . Power spectrum is the squared frequency spectrum FFT of the signal which has the dimension of microvolts. The resulting dimension is  $\mu v^2$  (microvolts squared or  $\mu v^2/Hz$  for density).

### 3.6 Statistical analysis

Experimental data were analyzed using SPSS software. SPSS (Statistical Package in Social Science) is a Windows based program used to perform data entry and analysis and to create tables and graphs. SPSS is capable of handling large amounts of data and can perform all of the analyses covered in the text and much more. Means and standard deviations have been found to test the sample to all types of signals (48).

## Results and Discussion

### 4.1 Introduction

In this chapter, we will reveal the results of the spectral power analysis for the five frequency bands. Also, we will discuss these results based on the mean power and standard deviation. We conducted a comparison between a group of people with epilepsy (epilepsy group) and another group who do not have epilepsy (normal group) in terms of the spectral power analysis of the five frequency bands.

### 4.2 Results

#### 4.2.1 Epilepsy group:

Figures 10, 11 and 12 illustrate the means and the standard deviations of powerspectral density within people with epilepsy. The results revealed that theta band had recorded the highest power at O1, F3 and F4electrodepositions. Also it can be seen that the value of delta power was lower than the value of theta power. In addition, the value of alpha power was slightly lower than the value of delta power then the value of beta power comes next. Furthermore, the figures show that gamma band has the lowest power. These values are found in table1, page117.

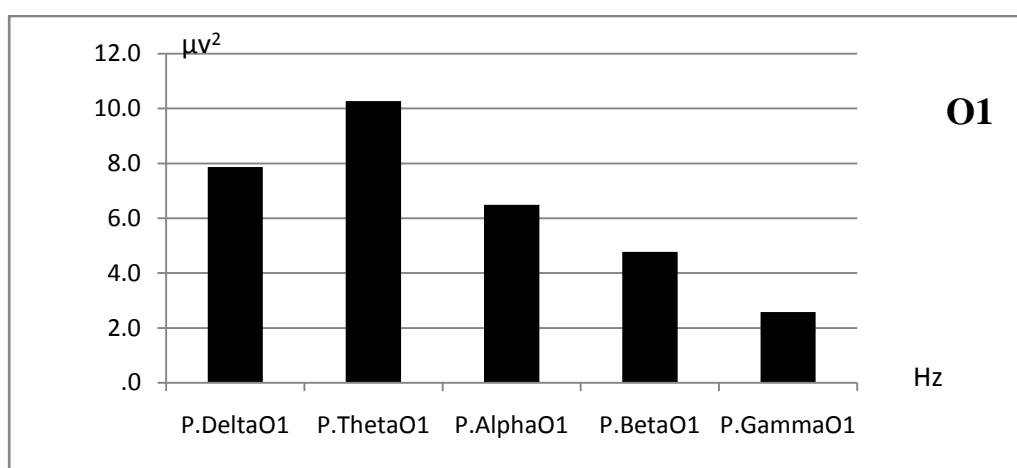


Fig. 10: The power spectral density of the five frequency bands at the electrode position O1 for epilepsy group

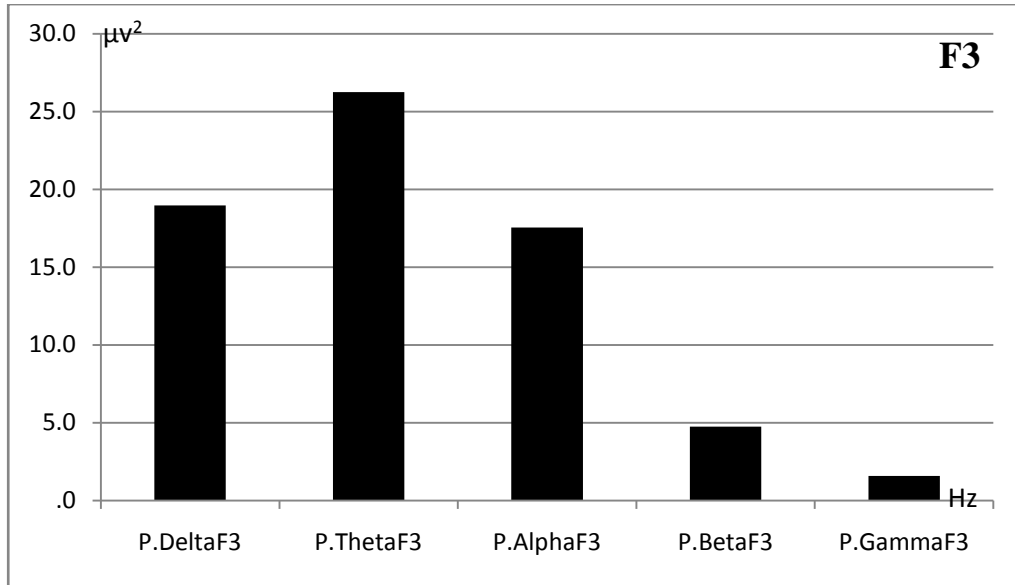


Fig.11: The power spectral density of the five frequency bands at the electrode position F3 for epilepsy group

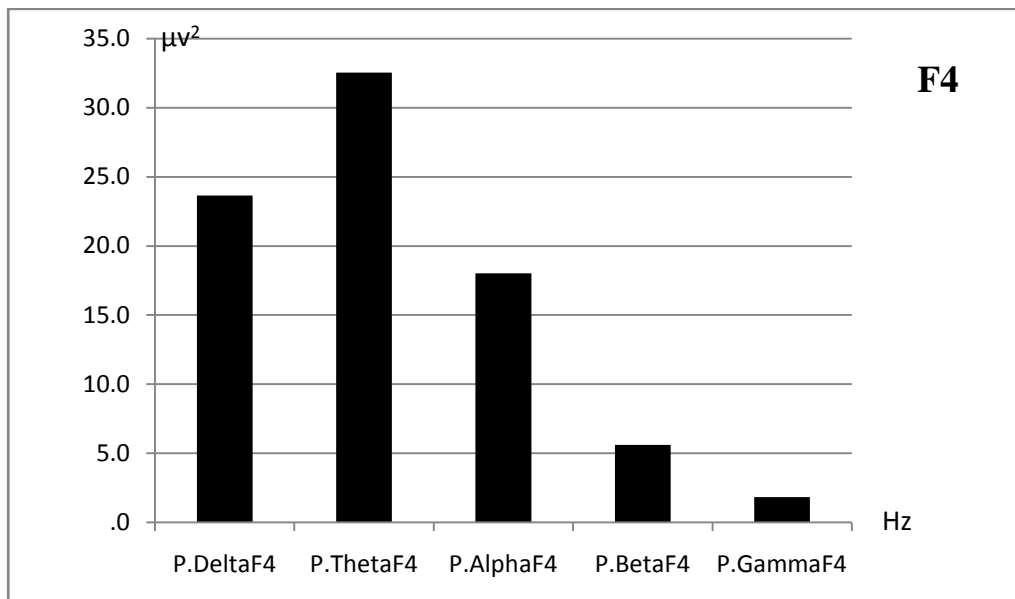


Fig.12: The power spectral density of the five frequency bands at the electrode position F4 for epilepsy group

From figures 13, 14, 15, 16 and 17, at the electrode positions C3,P3,O2,C4, and P4,it can be observed that the value of theta band power is the highest among people with epilepsy,followed respectively by alpha band. However, the figures illustrate that gamma band has the lowest power. These values are found in table1, page117.

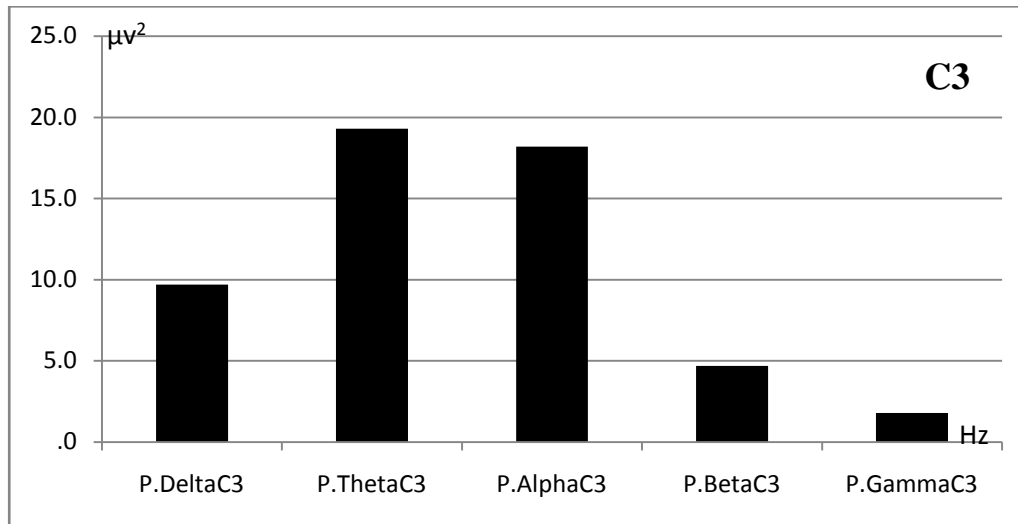


Fig.13: The power spectral density of the five frequency bands at the electrode position C3 for epilepsy group

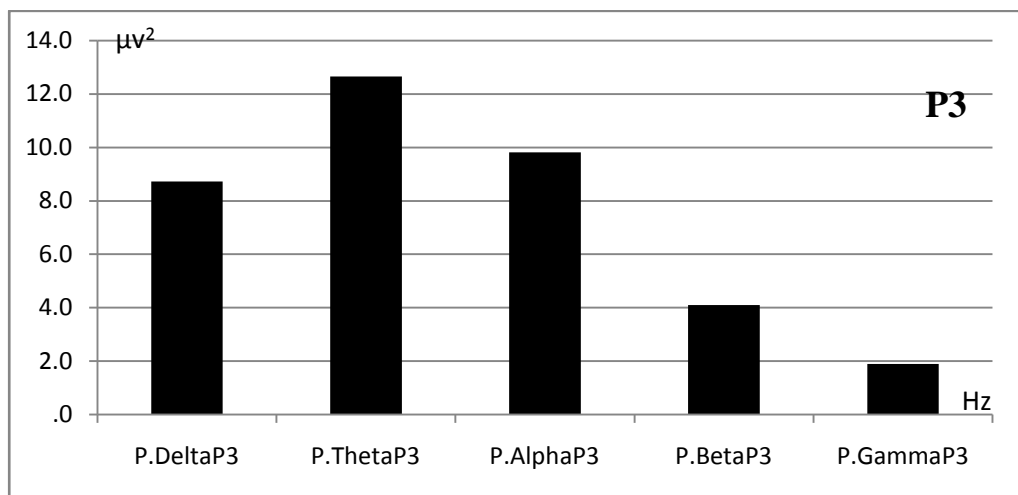


Fig.14: The power spectral density of the five frequency bands at the electrode position P3 for epilepsy group

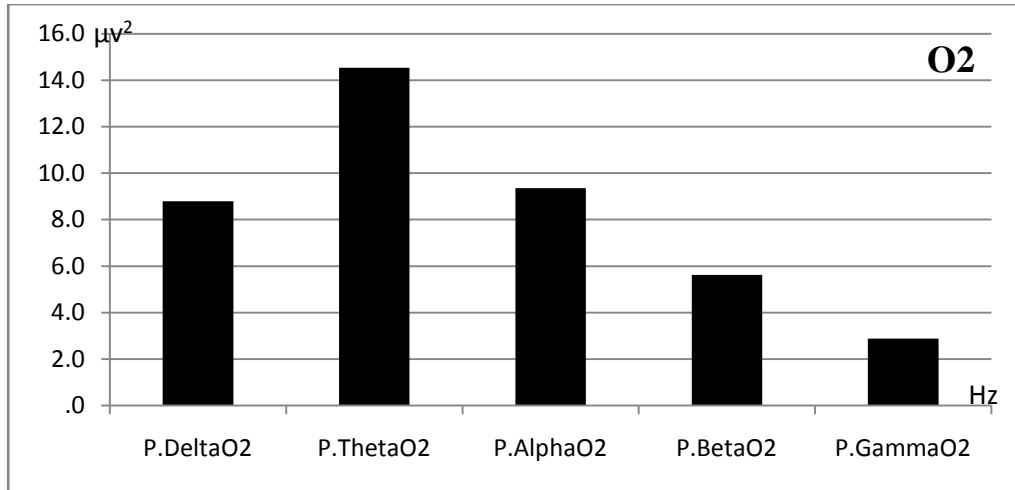


Fig.15: The power spectral density of the five frequency bands at the electrode position O2 for epilepsy group

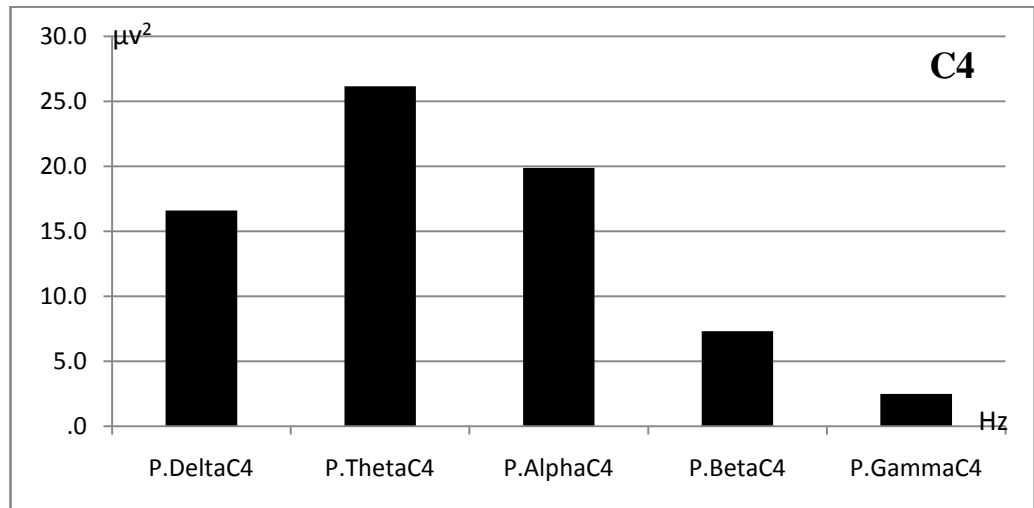


Fig.16: The power spectral density of the five frequency bands at the electrode position C4 for epilepsy group

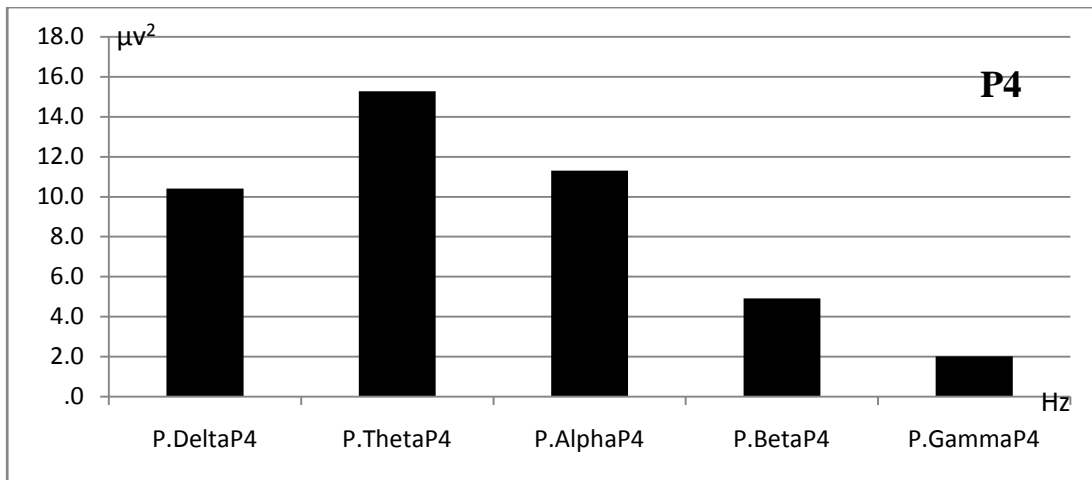


Fig. 17: The power spectral density of the five frequency bands at the electrode position P4 for epilepsy group

#### 4.2.2 The Normal group (People who do not have Epilepsy):

The figures 18, 19 and 20 show the means and the standard deviations of powerspectral density within people who do not have epilepsy (normal group). It is clear that delta band recordedthe highest power at O1, F3 and F4electrodepositions. Also it can be obviously seen that the value of theta power was lower than the value of delta power. However, the value of alpha power was slightly lower than the value of theta power, followed respectively by beta power. Furthermore, the figures show thatgamma band has the lowest power. These values are found in table1, page133.

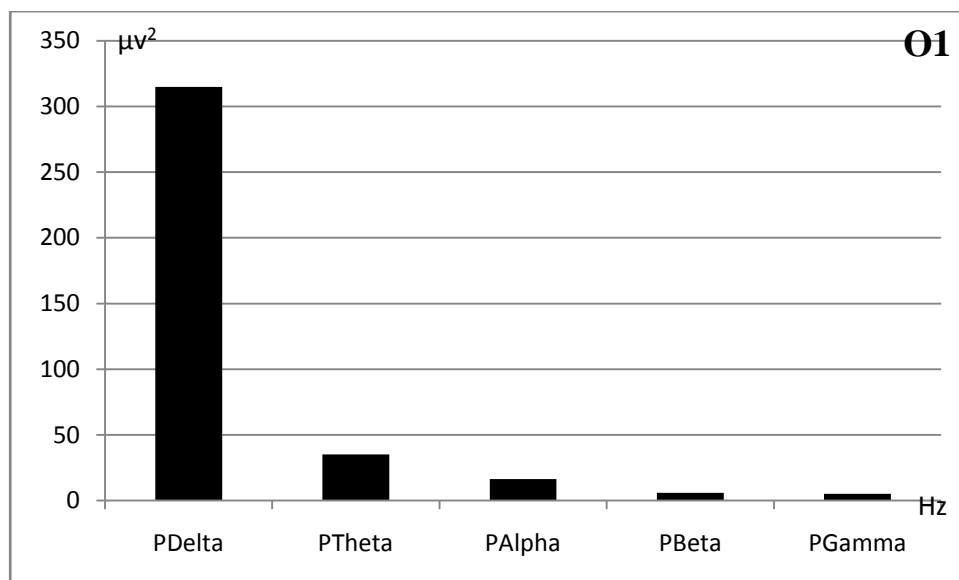


Fig. 18: The power spectral density of the five frequency bands at the electrode position O1 for normal group

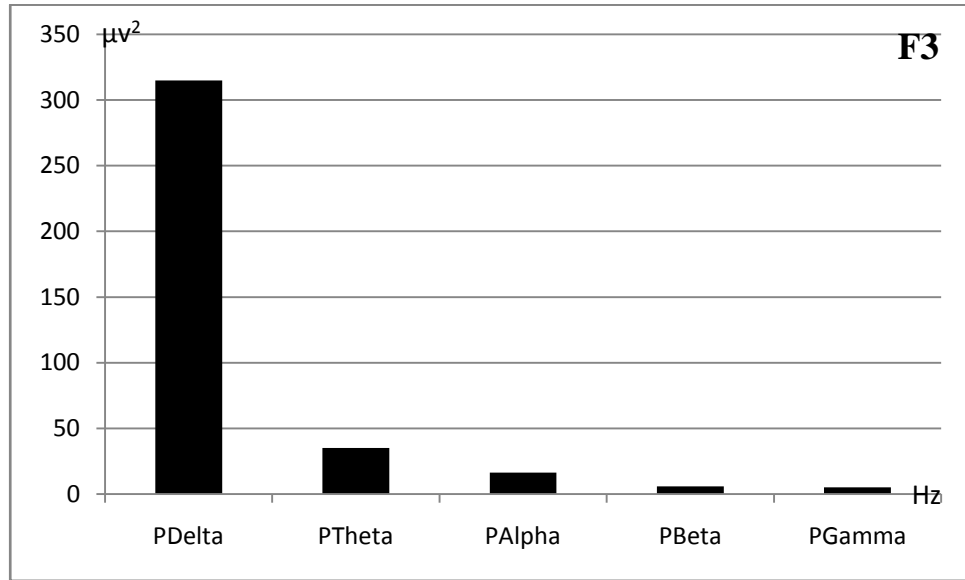


Fig. 19: The power spectral density of the five frequency bands at the electrode position F3 for normal group

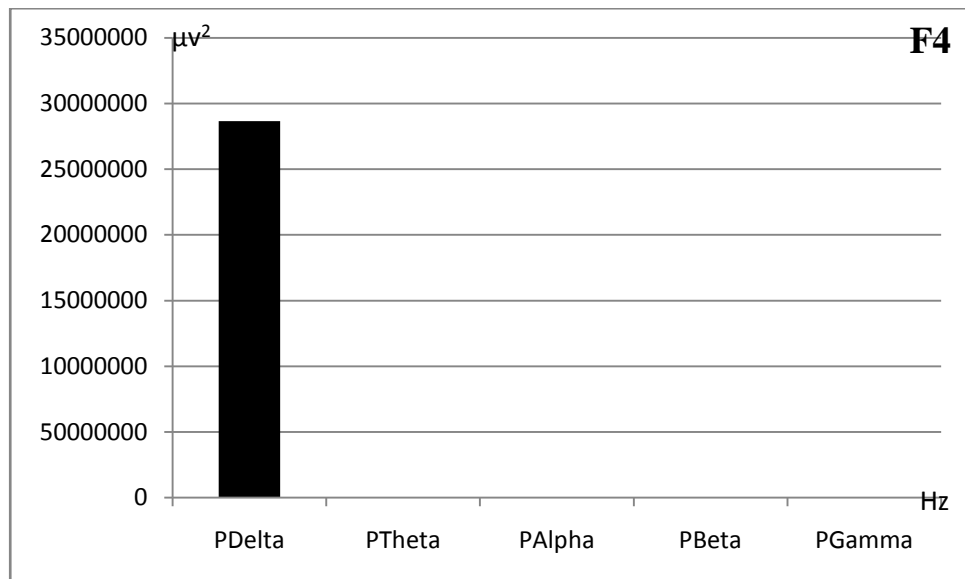


Fig. 20: The power spectral density of the five frequency bands at the electrode position F4 for normal group

We notice in figures 21 and 22, at the electrode positions C3 and P3, that the delta band power has the highest value among the normal people, followed respectively by alpha band. However, the figures illustrate that gamma band has the lowest power. These values are found in table 1, page 133.

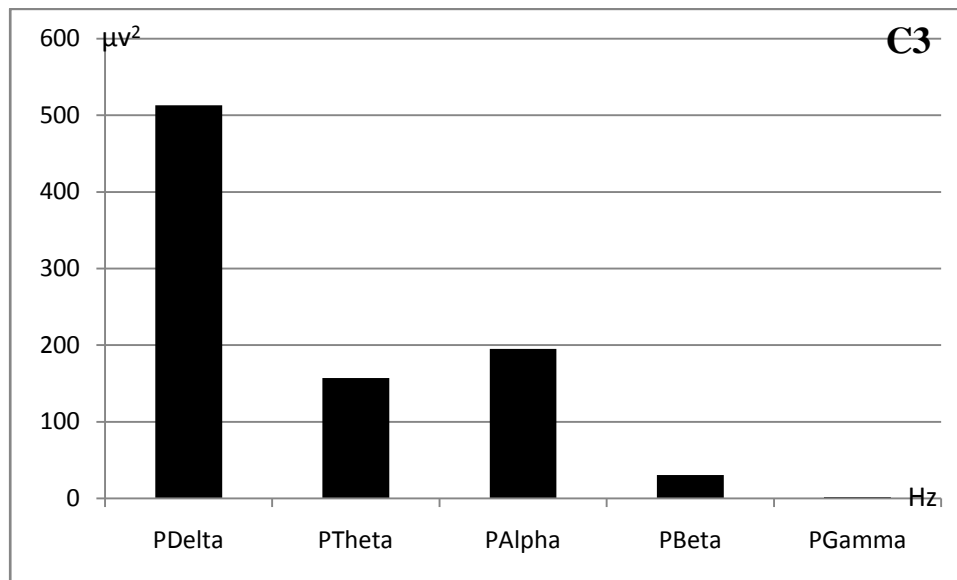


Fig. 21: The power spectral density of the five frequency bands at the electrode position C3 for normal group

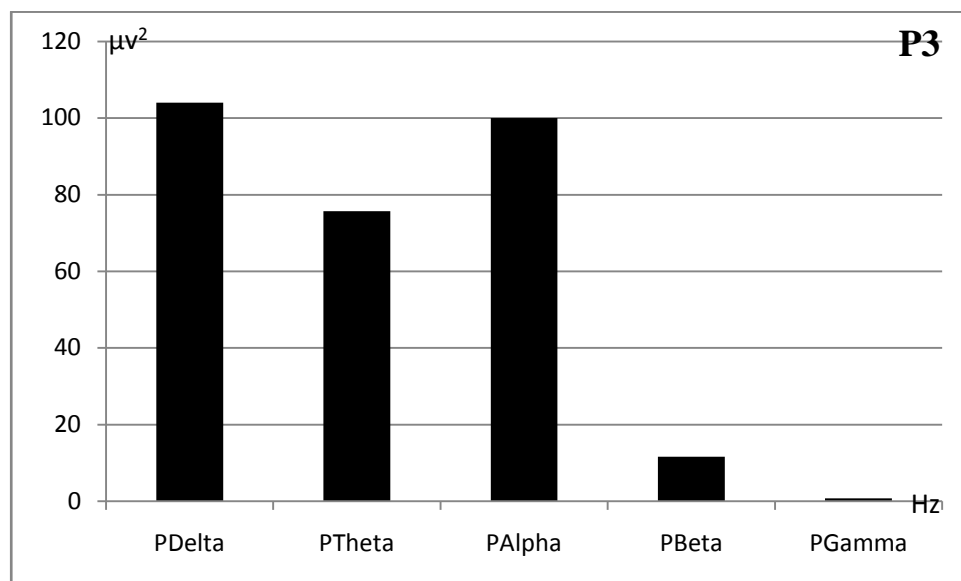


Fig. 22: The power spectral density of the five frequency bands at the electrode position P3 for normal group

This figures 23, 24 and 25 illustrate the means and the standard deviations of the powerspectral density within people who do not have epilepsy (normal group). The results showed that alpha band recordedthe highest power at the electrodepositions O2, C4 and P4. Furthermore, the results revealed that gamma band has the lowest power. These values are found in table1, page133.

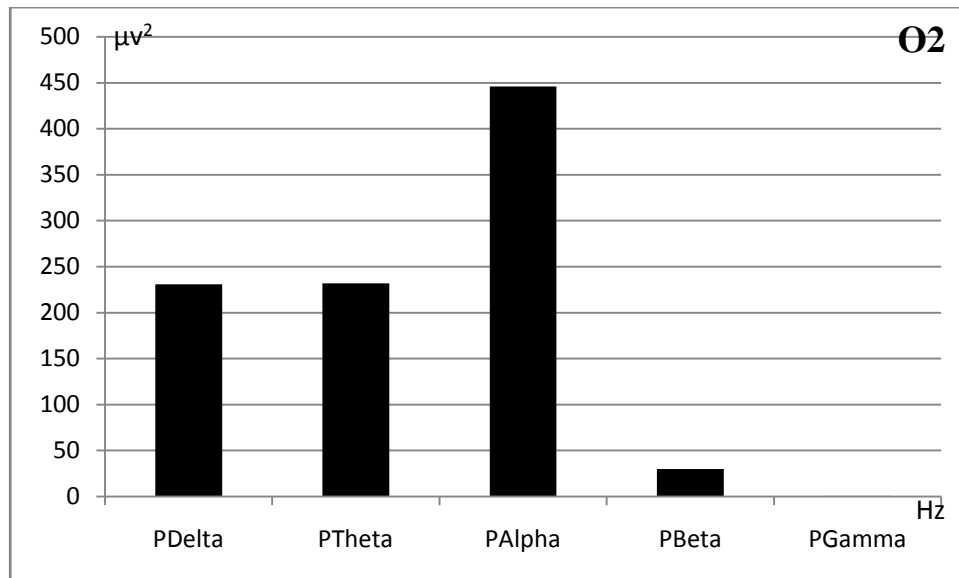


Fig. 23: The power spectral density of the five frequency bands at the electrode position O2 for normal group

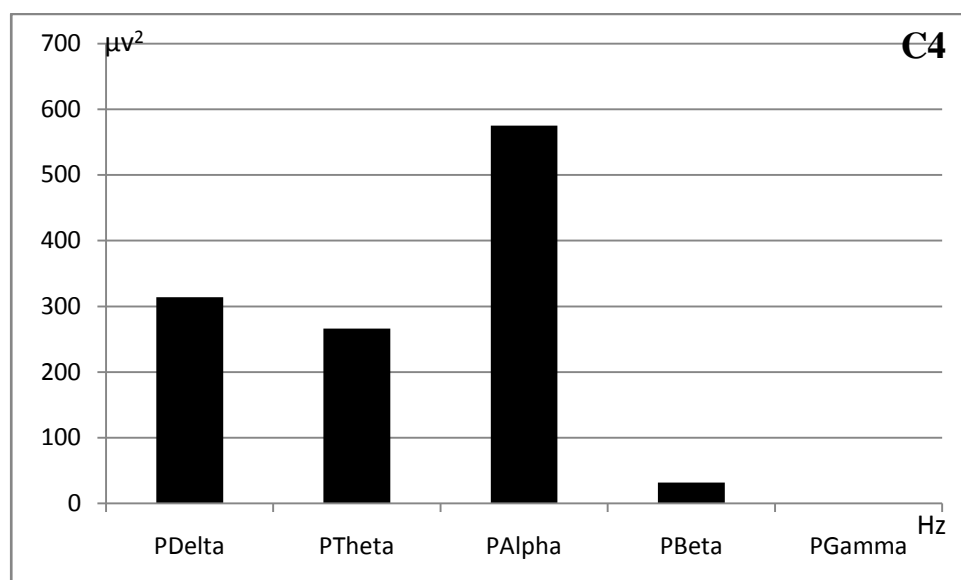


Fig. 24: The power spectral density of the five frequency bands at the electrode position C4 for normal group

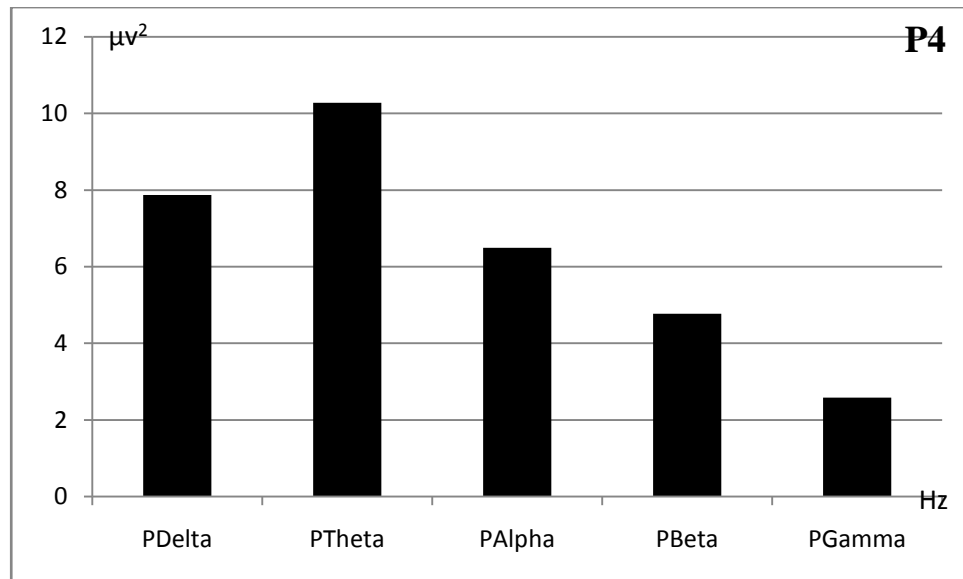


Fig. 25: The power spectral density of the five frequency bands at the electrode position P4 for normal group

### 4.3 Discussion

There were five broad spectral sub-bands of the EEG signal which are generally of clinical interest: delta, theta, alpha, beta and gamma waves. Higher frequencies and higher mean power are more common in abnormal brain states such as epilepsy (i.e. there is a shift of EEG signal energy from low to high frequency and power bands before and during a seizure) (45). These five frequency sub-bands provide more accurate information about neuronal activities underlying the problem and, consequently, some changes in the EEG signals, which are not so obvious in the original full-spectrum signal and can be amplified when each sub-band is considered independently (45). The influence of epilepsy on brain signals in the occipital region (O1,O2), the frontal region (F3,F4),the central region (C3,C4), the parietal region (P3,P4) was studied using the power spectrum density. The analysis of PSD on epilepsy group revealed that the highest influence was on theta wave, while the least influence was on gamma wave. This agrees with the results of a previous study (42)of which it revealed that theta and alpha is the highest value among all. On the other side, the analysis of power spectrum density revealed that the influence on the sample of people who do not have epilepsy (normal group) was higher on delta wave than the other electrode positions, while the least influence was on Gamma wave.According to Samanwoy et al (2007) (35), he found that there is a higher power for beta and gamma sub-bands, whereas there is a lower power for alpha sub-band. Also, Ouyang (2007) (41),

he found that EEG recordings can track the hidden dynamical changes of brain electrical activity, the findings showed that beta waves at (10-30 Hz) is the best wave and that can obtain the best performance of seizure prediction of EEG signals. On the other hand, these findings were similar to Michel Le Van Ouyen (2005) (42), who concluded that a specific state of brain synchronization can be observed several hours before the actual seizure, mostly within (4-15 Hz) frequency band. While Suzuki (1996) (44), he found that remission group showed less theta 1 and alpha 2 power in the bilateral frontal regions, and less right predominance in alpha 1 power in the parietal regions. Most of the findings had high accuracy and sensitivity while using EEG test.

The results of our research are completely different than the results of the above mentioned researches. This difference in the results is attributed to the difference in the range of frequencies. In addition, my research showed different results due to the differences between the age and the number of samples should be more. Furthermore, we conducted this research in a different region, in addition to other more reasons.

#### **4.4 Summary**

In this chapter we discussed the results we got from the analysis of power spectral density of EEG signals in group1 (epilepsy group) and group2 (normal group). In epilepsy group, the analysis revealed that the mean power of the theta band has the highest value in all electrode position. In normal group, the analysis revealed that the mean power of delta band has the highest value in most of the electrode position.

## **Conclusions and Future Work**

### **5.1 Introduction**

This research aims to figure out the influence of epilepsy on the five frequency bands (delta, theta, alpha, beta and gamma). We used the Electroencephalography (EEG) analysis as a tool for diagnosing epilepsy in human brain by extracting the power spectrum density of the five frequency bands. The EEG recording was performed in supine condition. The experimental results indicated that patients had power spectrum analysis values during previous stage higher than those of the normal group. Epilepsy disease causes abnormal changes in the EEG power spectrum analysis in the human brain. It causes an increase in the power spectrum, which may be interpreted as a diffuse and a widespread cerebral degeneration. Moreover, the high EEG power spectrum analysis values may also affect impairment of brain functional connections. As discussed in this study, there are differences between the values of power spectrum among people with epilepsy and those healthy people. This experimental result provided evidence that people with epilepsy show more consistency during previous stage, suggesting activation of brain-related stimulation failure. In this study, 35 persons with epilepsy were diagnosed, in addition to six healthy ones. We analyzed the signals and categorized them by waves to recognize the statistical pattern and the standard deviation. The procedures and methodologies used to analyze EEG signals to find the mean power of the five EEG frequency bands have been used. We also described the experiment process in details for each person from the sample.

EEG wave's classification was done by an accurate and highly professional technique. The research method was based on the Fast Fourier transform. The Fast Fourier transform is used as a classifier of the EEG frequencies. The EEG device is so professional in rejecting undesired frequencies and permits the levels to discriminate the EEG waves only. This method offers more efficiency than others, which can differentiate easily between EEG waves. The analysis of the power spectrum density on epilepsy group revealed that the highest effect was on theta wave, also it can be seen that the value of alpha power was lower than the value of theta power in most channels. In addition to the value of delta

power was slightly lower than the value of alpha power in most of electrode positions. The value of beta power comes next in all channels. While the least effect was on gamma wave. On the other side, the analysis of the power spectrum density on normal group revealed that the highest effect was on delta wave in 5 electrode positions(O1, F3, F4, C3, and P3). But the highest effect was on alpha wave in 3 electrode positions(O2, C4, and P4). While the least influence was on Gamma wave in all electrode positions. Through these findings, epilepsy can be diagnosed to help to identify the places of injury for surgery in the affected area.

## **5.2 Future Work**

In the light of the results of this research, it is recommended that any researcher, who is interested in studying the epilepsy disorder, to notice how epilepsy affects the high-frequency of the heart rate variability (HRV) in the ECG signal (as a parasympathetic index). I also recommend noticing how it affects the low-frequency (as sympathetic index) as well. This can provide us with more data about the relationship between the epilepsy and the HRV components, which may be so useful in diagnosing the disease easily.

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## 7. Appendix

### Epilepsy Group

#### Case (1)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
8.939	3.6437	5.82	3.524	3.0064	4.3475	1.5228	7.8585	10.898	6.4796
14.762	1.8117	6.1851	5.82	3.1626	11.18	2.4024	8.9097	7.8585	14.59
34.675	4.1095	8.3735			13.527	1.604	5.157		
15.26	6.507	5.5801			2.5841	1.932	2.9178		
2.8878	2.3214				1.8136	0.78594			
0.26074	2.4778				0.69457	2.7049			
0.6052	7.3701				0.47636	5.64			
0.23778	7.3808				0.526	4.6725			
0.19349					0.40683				
0.25395					0.36425				
0.021134					0.37384				
0.025177					0.060418				
0.10831					0.094708				
0.10056					0.13986				
0.063815					0.070126				
0.06324					0.036645				
4.903575	4.45275	6.489675	4.672	3.0845	2.293488	2.658068	6.21075	9.37825	10.5348

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.4212	2.4458	5.6358	7.2265	3.973	6.0775	1.9215	7.782	8.4406	2.9645
5.6976	1.9797	6.5812	5.6358	9.7193	3.3116	1.1637	6.8787	7.782	6.5036
7.5111	1.6908	5.318			5.9861	1.6123	4.0999		
2.5583	1.9608	3.05			5.1941	2.3723	2.2802		
1.8712	0.34318				1.396	0.85975			
0.68193	2.6008				0.35218	2.8753			
0.80447	5.7394				0.40967	5.8779			
0.57231	4.4013				0.68531	6.276			

0.55108					0.28155				
0.45426					0.24872				
0.1023					0.081697				
0.1511					0.043397				
0.13926					0.071254				
0.056243					0.071327				
0.049713					0.056602				
0.054604					0.061323				
1.542292	2.645223	5.14625	6.43115	6.84615	1.520521	2.869844	5.2602	8.1113	4.73405

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.5227	1.5537	5.0938	7.5106	1.1058	1.1799	0.63508	8.1363	5.906	0.55623
3.5836	2.1536	6.8736	5.0938	3.8284	8.0901	0.10987	8.5759	8.1363	5.0757
7.0489	3.8092	5.9672			11.613	2.1567	4.611		
4.947	6.7634	2.1974			4.4156	3.9262	1.72466		
2.6457	2.5689				2.8048	4.1629			
0.59626	3.6983				0.63304	4.1849			
0.25327	3.5129				0.29655	6.057			
0.20929	7.4983				0.16119	4.6681			
0.203					0.17809				
0.15153					0.30017				
0.070017					0.069494				
0.096217					0.064101				
0.13983					0.13239				
0.058062					0.082956				
0.061124					0.070642				
0.047839					0.039455				
1.352146	3.944788	5.033	6.3022	2.4671	1.883217	3.237594	5.761965	7.02115	2.815965

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.5227	1.1083	7.0508	5.2445	1.2894	4.2707	1.066	6.9682	8.5164	1.8874
3.5836	1.4242	7.568	7.0508	5.2555	8.5283	1.7022	6.5941	6.9682	6.8962
7.0489	2.3237	5.1622			14.254	3.2536	5.6759		
4.947	4.5691	2.1415			9.9884	5.885	2.7558		
2.6457	3.267				3.132	2.2302			
0.59626	4.8598				0.44911	3.7714			
0.25327	5.7103				0.14084	3.9871			
0.20929	6.5584				0.4799	1.503			

0.203					0.26325				
0.15153					0.065791				
0.070017					0.073752				
0.096217					0.084023				
0.13983					0.11192				
0.058062					0.079554				
0.061124					0.087532				
0.047839					0.067363				
1.352146	3.7276	5.480625	6.14765	3.27245	2.629777	2.924813	5.4985	7.7423	4.3918

Case (2)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
28.695	6.4392	15.038	13.449	4.1693	15.347	4.8477	11.295	18.123	7.9239
30.887	3.1982	13.619	15.038	4.1507	15.839	7.1971	8.5848	11.295	21.156
7.8487	3.7661	8.3909			3.6847	4.0899	5.404		
4.1769	5.1909	3.7338			1.4641	2.2664	1.8569		
1.8622	8.8661				0.52638	2.3515			
1.7114	16.015				0.3985	1.7886			
0.85911	12.031				0.42629	2.7753			
0.60383	8.9543				0.10267	8.6863			
0.84647					0.40817				
0.42385					0.34669				
0.27551					0.37933				
0.19235					0.47096				
0.35336					0.36646				
0.11434					0.2126				
0.25027					0.34081				
0.20015					0.24471				
4.956278	8.0576	10.19543	14.2435	4.16	2.534898	4.25035	6.785175	14.709	14.53995

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
18.498	5.9645	14.734	11.469	3.4466	17.43	5.59	12.883	9.0133	3.1555
19.2	8.3564	12.806	14.734	8.9057	21	4.277	14.759	12.883	3.2959
4.0355	3.7179	9.435			4.6451	1.9905	8.5977		
1.274	1.902	1.9931			1.443	1.6701	1.9335		
0.44988	3.1027				0.78641	3.2729			
1.1023	2.4673				1.2317	4.9991			
0.4692	3.3747				0.3908	4.8815			
0.14202	7.4726				0.33368	4.2369			

0.29021					0.54055				
0.28754					0.40971				
0.33097					0.26034				
0.33679					0.28385				
0.26968					0.20733				
0.095686					0.063683				
0.30445					0.24372				
0.21497					0.28165				
2.956325	4.544763	9.742025	13.1015	6.17615	3.09697	3.86475	9.5433	10.94815	3.2257

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
33.602	13.802	18.075	16.51	4.3084	22.994	3.5863	12.154	8.842	8.9522
29.405	11.562	12.548	18.075	10.547	23.921	6.8348	8.761	12.154	18.926
7.229	12.392	6.2392			4.7589	5.7003	5.707		
2.6992	11.203	8.9636			2.2583	5.4047	3.8068		
1.8817	11.236				1.1852	7.8478			
2.2043	18.794				0.87543	4.8028			
1.1176	20.357				0.27502	7.0575			
0.56642	9.3897				0.41344	18.967			
1.0429					0.60581				
0.55384					0.5994				
0.2814					0.10694				
0.33179					0.19457				
0.18791					0.35582				
0.18416					0.25636				
0.19753					0.31446				
0.087016					0.16427				
5.098235	13.59196	11.45645	17.2925	7.4277	3.704933	7.52515	7.6072	10.498	13.9391

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
26.786	6.7169	14.088	8.9192	3.1796	27.082	5.4524	13.715	7.6108	2.6678
26.611	10.712	9.3268	14.088	6.2548	28.414	8.7283	8.605	13.715	5.6823
4.8215	10.043	4.63			5.3871	8.43	3.2895		
2.2557	7.9443	7.0387			1.8503	5.4339	4.4648		
1.5283	8.9048				1.2206	5.0665			
2.3602	5.6154				1.4861	6.7003			
0.79873	7.5776				0.61755	10.001			
0.76735	17.554				0.93596	12.091			

1.2024					0.91562				
1.3298					0.63366				
0.15927					0.16655				
0.35171					0.30828				
0.42805					0.28205				
0.42078					0.26417				
0.36472					0.27975				
0.25099					0.18554				
4.402281	9.3835	8.770875	11.5036	4.7172	4.376827	7.737925	7.518575	10.6629	4.17505

Case (3)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
36.625	14.573	8.7102	12.302	7.359	3.4661	5.3246	10.339	4.7893	1.1721
31.248	5.4137	18.656	8.7102	20.988	17.373	4.3138	16.431	10.339	2.9997
17.192	12.929	13.379			10.725	2.5296	9.2078		
6.1604	3.5183	11.061			1.4962	1.8681	3.0522		
4.6446	5.4066				0.88219	3.8886			
0.54876	2.8934				0.28605	7.961			
0.061696	13.474				0.10956	5.968			
0.3618	40.439				0.32637	3.0054			
0.51991					0.44585				
0.45227					0.089095				
0.10414					0.30537				
0.04102					0.14684				
0.030927					0.15707				
0.003509					0.1132				
0.053674					0.049843				
0.061904					0.042032				
6.131851	12.33088	12.95155	10.5061	14.1735	2.250861	4.357388	9.7575	7.56415	2.0859

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
9.1588	10.264	11.748	11.238	3.5899	19.43	13.564	12.2	16.815	8.2795
25.73	5.7646	20.876	11.748	11.877	25.569	6.0552	19.865	12.2	27.977
12.938	3.8602	10.911			10.733	7.461	10.809		
3.2346	0.723	8.8693			2.776	1.94	8.4143		
2.4373	4.6872				2.9374	3.9506			
0.47003	6.1766				0.64757	3.9569			
0.29793	5.8593				0.24231	8.0344			
0.80411	10.045				0.71709	22.866			
0.94084					1.1313				
0.34609					0.45777				
0.27406					0.20424				
0.10115					0.06692				
0.21051					0.056377				
0.26133					0.0756				
0.088184					0.00447				
0.10623					0.048111				
3.587448	5.922488	13.10108	11.493	7.73345	4.068572	8.478513	12.82208	14.5075	18.12825

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
26.02	43.329	11	16.406	10.183	2.5002	11.436	20.945	1.1605	7.1041
26.377	10.126	25.003	11	23.565	24.795	10.745	9.5345	20.945	3.2572
41.848	25.541	15.987			14.922	10.932	11.309		
17.831	9.9612	13.344			1.5497	6.7319	9.0474		
9.3987	17.536				0.98018	10.685			
0.8213	10.112				0.59026	7.649			
1.4987	19.924				0.38365	3.6075			
1.6888	43.821				0.53997	6.6105			
0.46834					0.031711				
0.74382					0.063437				
0.053557					0.020315				
0.13537					0.12333				
0.064086					0.1466				
0.043515					0.16557				
0.22876					0.092599				
0.067345					0.087932				
7.955518	22.54378	16.3335	13.703	16.874	2.937028	8.549613	12.70898	11.05275	5.18065

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.3198	20.125	34.209	18.031	100.19	6.8225	17.83	24.137	21.521	2.5451
26.451	4.0266	53.129	34.209	107.8	36.225	9.4395	17.484	24.137	13.235
21.549	4.4903	57.272			19.49	16.999	15.383		
5.1882	6.011	23.665			6.6798	7.9737	8.2415		
1.3582	10.863				9.4334	15.978			
0.20478	13.77				0.97857	11.035			
0.66222	3.824				0.58075	15.181			
2.003	15.184				1.0839	25.622			
0.13561					0.17226				
0.89708					0.24909				
0.25018					0.075599				
0.87201					0.082921				
0.77538					0.11044				
1.3247					0.22143				
1.2119					0.14274				
1.0251					0.021926				
4.26426	9.786738	42.06875	26.12	103.995	5.148145	15.00728	16.31138	22.829	7.89005

### Case (4)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
5.939	2.4598	4.19	14.932	8.6261	10.75	1.9443	9.3141	24.969	9.9988
5.4874	2.1549	3.9875	4.19	29.046	5.5677	1.5958	6.2539	9.3141	38.365
1.4785	3.2849	5.799			1.1295	4.2321	9.5883		
3.7953	0.94244	4.6994			4.3433	5.6591	4.982		
2.1834	1.4573				2.9079	3.8142			
0.24742	3.0753				0.31455	2.5007			
0.81417	7.1598				0.77149	8.464			
0.31073	10.226				0.22931	23.077			
0.21862					0.13208				
0.09924					0.082949				
0.0903					0.081508				
0.020623					0.05865				
0.083932					0.025039				
0.11137					0.041675				
0.12127					0.10297				
					0.12447				
1.400085	3.845055	4.668975	9.561	18.83605	1.666443	6.4109	7.534575	17.14155	24.1819

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
12.9031	2.9031	7.1528	29.766	7.2372	7.6085	2.1102	4.5777	19.731	11.893
6.3244	1.6761	2.3992	7.1528	34.238	6.0014	1.859	3.0917	4.5777	31.85
2.2569	4.1454	6.56			1.6298	3.0879	4.8964		
6.5571	5.0409	6.531			4.7193	1.8594	3.1845		
4.0932	3.8535				2.3074	1.7857			
0.23231	4.0744				0.2174	2.7075			
0.74836	10.701				0.64081	9.5606			
0.26349	28.791				0.38854	17.399			
0.13657					0.15552				
0.066076					0.10256				
0.082353					0.10823				
0.066066					0.034284				
0.026675					0.03136				
0.048595					0.048687				
0.099366					0.072667				
0.11551					0.095439				
2.126254	7.648175	5.66075	18.4594	20.7376	1.510119	5.046163	3.937575	12.15435	21.8715

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.8313	1.8927	3.7292	7.4319	8.1966	3.2578	0.88802	1.9209	8.0903	5.6676
3.9841	2.7811	0.98327	3.7292	21.249	1.7281	3.337	1.5884	1.9209	11.81
2.6644	3.5816	2.2648			0.47776	5.7356	3.3395		
1.217	1.3089	1.0652			1.5044	5.3868	2.9448		
1.3473	1.9838				1.0398	3.2652			
0.85829	3.2439				0.21173	2.5485			
0.19462	4.2838				0.23009	5.6718			
0.15397	6.1884				0.14804	14.319			
0.13817					0.23525				
0.19609					0.059357				
0.091749					0.020565				
0.025743					0.05506				
0.016977					0.029985				
0.027751					0.018823				
0.051857					0.02084				
0.033764									
0.802068	3.158025	2.010618	5.58055	14.7228	0.602507	5.14399	2.4484	5.0056	8.7388

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.556	0.74603	2.153	9.8284	6.5973	2.0586	0.49723	2.8457	8.1789	5.8783
2.3183	1.8618	1.9877	2.153	17.909	3.8302	1.6255	2.0675	2.8457	17.029
1.0524	5.1617	2.1081			1.277	3.7421	0.89122		
2.4028	6.2176	2.2274			1.7847	3.352	0.9905		
2.1533	2.6423				1.6162	1.5812			
0.37694	2.8354				0.4106	2.9681			
0.27534	9.4065				0.26895	7.8159			
0.099739	18.704				0.070454	10.593			
0.015528					0.14573				
0.29832					0.24683				
0.069936					0.075886				
0.012					0.018505				
0.025589					0.018818				
0.048896					0.03855				
0.024914					0.025503				
0.013654					0.031324				
0.796479	5.946916	2.11905	5.9907	12.25315	0.744866	4.021879	1.69873	5.5123	11.45365

Case (5)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.6804	1.9292	3.7039	6.9485	4.2257	4.4284	1.174	7.2739	0.49863	5.9789
3.0706	2.9193	6.2271	3.7039	2.3923	10.075	2.0199	3.213	7.2739	2.5819
4.857	4.2741	3.7313			5.2841	2.7718	3.6727		
8.6419	2.8129	1.9313			1.9909	1.9699	1.8298		
6.4347	3.7931				0.9867	1.1835			
0.76341	3.2407				0.37116	0.69647			
0.39583	5.5531				0.5233	6.4501			
0.61664	8.0581				0.36636	4.6202			
0.44332					0.22229				
0.070321					0.30069				
0.079315					0.074625				
0.092117					0.12231				
0.045985					0.095282				
0.060096					0.066635				
0.021231					0.073821				
0.071642					0.18705				
1.896532	4.072563	3.8984	5.3262	3.309	1.573039	2.610734	3.99735	3.886265	4.2804

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.6589	1.4867	5.4867	2.3455	3.4314	5.8103	1.6359	4.0068	4.0273	3.8406
4.6902	2.5607	4.7169	5.4867	1.5566	2.4101	2.6882	5.1422	4.0068	2.1119
3.158	3.3675	5.1963			1.6817	3.2411	4.7785		
2.2036	2.1574	2.4692			3.1368	2.9227	2.0649		
2.2727	2.3313				3.8612	3.5725			
0.80146	0.32124				1.5481	1.0406			
0.59212	7.912				0.96382	9.9582			
0.45337	9.5648				0.88226	14.838			
0.31194					0.51741				
0.19088					0.2266				
0.13568					0.10846				
0.1805					0.18106				
0.091007					0.079373				
0.034532					0.10595				
0.037729					0.030504				
0.11813					0.097651				
1.120672	3.712705	4.467275	3.9161	2.494	1.352581	4.98715	3.9981	4.01705	2.97625

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.6712	1.5054	7.5142	6.1863	2.5993	6.0397	7.1986	42.299	26.088	12.284
3.65	2.6714	12.981	7.5142	0.76064	15.272	3.6174	24.274	42.299	21.325
4.9361	6.4611	6.7139			11.631	5.8196	18.005		
7.161	4.1408	4.532			2.5728	3.1443	6.1041		
5.4537	2.4111				0.99798	1.704			
0.59789	0.81866				0.37568	1.3623			
0.42173	5.5083				0.54758	14.096			
0.44825	4.7861				0.76893	10.031			
0.32518					0.47745				
0.049318					0.19423				
0.10224					0.05358				
0.041978					0.041411				
0.080764					0.090367				
0.071603					0.16121				
0.033854					0.10556				
0.038688					0.074578				
1.567718	3.537858	7.935275	6.85025	1.67997	2.462754	5.87165	22.67053	34.1935	16.8045

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.6281	2.782	22.82	10.253	8.2578	1.7796	1.5347	15.164	11.435	3.2319
4.0998	3.94	23.131	22.82	6.2283	1.8168	3.6238	25.507	15.164	5.7787
4.5574	6.6629	15.542			2.6885	7.9379	14.834		
1.4939	4.097	5.4703			2.7888	5.3421	6.1855		
1.125	0.59455				2.72	1.0752			
0.45917	0.80841				0.7155	1.1041			
0.53659	5.9239				0.48678	4.2691			
0.37097	5.6666				0.43093	4.2759			
0.10551					0.21055				
0.22484					0.24295				
0.046019					0.12				
0.085764					0.11118				
0.12001					0.11645				
0.090678					0.069728				
0.038038					0.034022				
0.019544					0.02731				
0.937583	3.80942	16.74083	16.5365	7.24305	0.897444	3.64535	15.42263	13.2995	4.5053

**Case (6)**

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.6946	1.0517	1.3547	1.8305	0.65636	0.988	1.974	2.8623	0.65193	1.3736
3.9339	1.3879	1.3871	1.3547	0.70674	3.1386	1.57	2.4412	2.8623	2.2814
2.027	0.8882	0.86008			3.3996	0.96218	1.8111		
2.9561	1.2752	0.4083			4.8194	1.1355	0.81067		
3.2479	1.8455				4.6716	2.8519			
0.35563	1.3093				0.14712	1.2544			
0.11335	2.526				0.17417	2.134			
0.18974	2.5618				0.15356	2.827			
0.15144					0.23573				
0.19764					0.44493				
0.1709					0.16101				
0.069928					0.22338				
0.090206					0.26734				
0.1577					0.17696				
0.05856					0.053107				
0.074632					0.10654				
0.968077	1.6057	1.002545	1.5926	0.68155	1.197565	1.838623	1.981318	1.757115	1.8275

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.97204	2.223	2.5041	0.93319	0.44415	1.0836	1.8924	2.2651	1.0411	0.38612
4.0217	2.0956	2.2863	2.5041	1.1792	4.2615	2.0549	1.9996	2.2651	0.93187
3.1458	1.0697	1.7582			3.123	1.1589	1.3511		
4.5009	1.6375	0.79645			4.24	1.801	0.63884		
5.0005	2.8857				4.6933	2.8321			
0.25465	2.075				0.23134	2.0972			
0.13094	2.5544				0.13259	2.6147			
0.2517	3.2237				0.29966	3.0939			
0.2476					0.23403				
0.47989					0.33384				
0.16738					0.1657				
0.28878					0.23299				
0.20459					0.1207				
0.18746					0.1318				
0.11305					0.095899				
0.032102					0.038425				
1.249943	2.220575	1.836263	1.718645	0.811675	1.213648	2.193138	1.56366	1.6531	0.658995

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
357.12	2842.5	14782	5891	3550.3	2.2296	0.70954	0.97722	3.3574	1.1595
533.25	3119.8	7315.8	14782	12408	4.604	1.0533	1.3841	0.97722	1.9683
402.27	1643.3	5584.7			3.0314	0.47007	0.46375		
80962	882.31	3972.7			2.4691	1.172	0.15485		
163.52	1042.6				6.4724	1.9296			
145.96	1360.7				0.13706	1.0643			
121.23	1155.1				0.16136	4.1569			
223.8	1200				0.19095	4.8581			
130.67					0.17995				
99.933					0.44392				
615.72					0.043857				
631.74					0.068665				
390.55					0.075101				
192.99					0.071718				
130.53					0.0734				
904.63					0.093043				
5375.37	1655.789	7913.8	10336.5	7979.15	1.271595	1.926726	0.74498	2.16731	1.5639

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.6447	1.1403	1.3426	3.409	0.72381	1.9251	0.945	1.4577	3.3511	0.32893
5.8526	1.3873	1.9654	1.3426	1.5929	5.88	1.375	1.8128	1.4577	1.6792
3.3113	0.46122	1.0765			3.6844	0.5195	1.0685		
2.6126	1.3147	0.34128			2.7103	1.5462	0.3663		
6.3784	2.2877				5.9785	2.5107			
0.23833	1.3573				0.21685	1.9168			
0.28849	6.1291				0.44876	8.1699			
0.25529	6.608				0.47894	7.4776			
0.21893					0.14464				
0.57284					0.33785				
0.073595					0.13589				
0.097343					0.14379				
0.042389					0.080305				
0.084804					0.062572				
0.092062					0.053188				
0.090944					0.041916				
1.428414	2.585703	1.181445	2.3758	1.158355	1.395188	3.057588	1.176325	2.4044	1.004065

Case (7)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.3633	2.885	28.124	40.876	6.4629	2.5935	5.7975	19.412	35.647	6.9689
3.6507	2.9799	20.469	28.124	23.992	3.3415	3.6516	29.465	19.412	26.084
2.1449	1.3196	15.436			2.1902	4.1719	19.488		
12.378	2.9827	7.2961			1.869	2.9401	5.2384		
14.221	4.4296				5.3527	4.1938			
0.68672	5.115				0.67594	4.1158			
0.87796	6.3685				0.20644	3.9997			
0.7787	5.1904				0.305	4.6861			
0.87917					0.56745				
1.5771					0.57592				
0.21824					0.40132				
0.56774					0.31522				
1.1678					0.40868				
0.60064					0.39676				
0.56161					0.42359				
0.67708					0.70025				
2.709416	3.908838	17.83128	34.5	15.22745	1.270217	4.194563	18.40085	27.5295	16.52645

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.5039	5.2162	16.841	26.535	6.0385	2.5668	2.7626	15.019	22.939	5.6426
4.038	4.1701	29.579	16.841	19.301	4.5439	3.0223	23.496	15.019	18.917
2.4033	4.2699	25.215			2.7082	1.3834	19.104		
3.0409	3.5733	6.8029			4.5287	2.041	4.7576		
4.96	6.5161				8.4779	5.5531			
0.66873	6.2844				0.53282	5.5728			
0.24699	3.9546				0.34209	4.7342			
0.47108	6.5886				0.51366	5.6764			
0.62926					0.53296				
0.59358					0.66541				
0.55883					0.43487				
0.39387					0.4187				
0.31653					0.58923				
0.26458					0.36658				
0.47664					0.51257				
0.88605					0.96153				
1.465765	5.07165	19.60948	21.688	12.66975	1.793495	3.843225	15.59415	18.979	12.2798

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
6.9874	2.6785	6.1045	12.565	5.778	3.4253	6.3678	5.0327	9.0749	2.2405
7.3652	3.3414	3.5782	6.1045	6.0444	1.8971	2.9106	7.1787	5.0327	7.2189
4.1876	1.4943	6.6653			1.4142	1.8779	5.8987		
16.084	4.0167	5.947			1.0153	4.3473	4.7627		
27.264	5.1136				2.7657	3.3114			
2.3917	3.4764				0.35437	1.6144			
1.2966	5.1006				0.34018	1.4048			
0.92823	6.193				0.52283	2.2764			
0.91142					0.48551				
1.111					0.95636				
0.7826					0.82481				
0.49166					0.5385				
0.47499					0.43213				
0.29048					0.51249				
0.38091					0.84219				
0.56581					0.63875				
4.4696	3.926813	5.57375	9.33475	5.9112	1.060358	3.013825	5.7182	7.0538	4.7297

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.9442	5.3971	5.1073	10.007	4.0461	6.5231	4.0614	6.2375	12.539	6.4478
2.7031	3.9225	8.0323	5.1073	7.1339	5.5462	3.7752	7.4465	6.2375	7.53
1.2842	1.0475	6.9066			1.623	1.3916	6.5789		
1.6088	2.621	5.4904			4.0957	2.192	5.6776		
2.9999	3.3082				5.2906	3.3479			
0.34917	3.6566				0.77525	4.2181			
0.27874	2.999				0.43625	4.4971			
0.50005	4.631				0.70087	6.8659			
0.5312					0.63335				
1.0294					0.83567				
0.61005					0.47549				
0.55649					0.54767				
0.4817					0.5571				
0.36462					0.35292				
0.4658					0.4403				
0.53491					0.57014				
1.202646	3.447863	6.38415	7.55715	5.59	1.837726	3.79365	6.485125	9.38825	6.9889

Case (8)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.2808	0.64424	0.63149	0.47153	1.4368	1.5925	1.4065	1.0758	2.5966	3.0339
1.7226	0.82471	0.67154	0.63149	1.3855	1.0608	0.29775	1.0545	1.0758	1.8584
6.2466	0.68123	1.1525			0.80741	0.53297	0.96197		
5.9345	0.37319	0.44675			1.5227	1.0968	1.6142		
1.1571	0.69073				2.1817	1.8745			
0.27368	0.81473				1.1817	3.0503			
0.21645	0.10371				0.71385	1.3369			
0.069559	0.62253				0.25727	1.6678			
0.084236					0.1809				
0.11884					0.20944				
0.035881					0.21916				
0.054238					0.20873				
0.045921					0.20421				
0.059189					0.055857				
0.075279					0.044418				
0.039606					0.1005				
1.025905	0.594384	0.72557	0.55151	1.41115	0.658822	1.40794	1.176618	1.8362	2.44615

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.4311	1.7816	1.9482	1.9978	2.7192	0.89846	1.3691	1.0056	0.46369	1.2841
0.8402	0.83559	1.1271	1.9482	1.2983	0.34067	1.1361	0.74853	1.0056	0.87721
0.37713	0.49129	0.53134			1.1203	0.74381	0.62927		
1.0529	1.3379	0.75128			2.2595	1.242	0.36524		
1.9638	1.9452				0.58479	2.0426			
0.61383	3.8351				0.28898	2.2964			
0.50867	1.8024				0.33245	1.1625			
0.19511	1.7253				0.11092	1.5463			
0.17094					0.060587				
0.22693					0.059981				
0.1669					0.06673				
0.12062					0.099699				
0.1327					0.062516				
0.088692					0.04415				
0.042227					0.061415				
0.075163					0.06252				
0.500432	1.719298	1.08948	1.973	2.00875	0.403354	1.442351	0.68716	0.734645	1.080655

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.84973	1.4952	0.8311	1.2607	0.77981	2.3512	3.9132	9.4408	10.845	4.4544
0.88254	1.6902	0.86554	0.8311	0.56665	3.601	2.7833	9.4916	9.4408	10.562
5.1255	1.0903	0.7509			1.2496	2.5398	5.0166		
5.785	1.8871	1.0194			1.9047	1.5038	3.5644		
1.4632	2.1921				2.2083	1.2426			
0.22412	0.97741				0.51406	3.3031			
0.3787	0.18177				0.37619	2.8612			
0.21795	0.44052				0.26217	1.5598			
0.11773					0.19071				
0.084873					0.2654				
0.01466					0.11417				
0.028415					0.13343				
0.022069					0.19741				
0.019395					0.21214				
0.033466					0.39507				
0.025513					0.44488				
0.954554	1.244325	0.866735	1.0459	0.67323	0.901277	2.46335	6.87835	10.1429	7.5082

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.991123	2.6283	4.5269	2.2902	2.8986	0.89994	1.0585	0.25535	0.242333	0.55383
1.8032	0.75763	3.4082	4.5269	1.6588	1.2917	0.57834	0.32144	0.25535	1.2346
0.7192	1.2932	2.0809			1.193	0.38897	0.70826		
1.213	3.167	2.7875			1.5802	2.2348	0.50912		
1.0916	4.5037				0.41337	3.4738			
0.21785	4.0754				0.27786	2.3235			
0.2668	2.0639				0.37812	0.81273			
0.073564	0.87293				0.14745	0.627			
0.097189					0.12115				
0.10366					0.085226				
0.062599					0.022758				
0.079398					0.036765				
0.04084					0.013344				
0.08148					0.032474				
0.10859					0.55209				
0.059916					0.012228				
0.438126	2.420258	3.200875	3.40855	2.2787	0.441105	1.437205	0.448543	0.248842	0.894215

Case (9)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.2808	0.64424	0.63149	0.47153	1.4368	1.5925	1.4065	1.0758	2.5966	3.0339
1.7226	0.82471	0.67154	0.63149	1.3855	1.0608	0.29775	1.0545	1.0758	1.8548
6.2466	0.68123	1.1525			0.80741	0.53297	0.96197		
5.9345	0.37319	0.44675			1.5227	1.0968	1.6142		
1.1571	0.69073				2.1811	1.8745			
0.27368	0.81473				1.1817	3.0503			
0.21645	0.10371				0.71385	1.3369			
0.069559	0.62253				0.25727	1.6678			
0.084236					0.1809				
0.11884					0.20944				
0.035811					0.21916				
0.054238					0.20873				
0.045921					0.20421				
0.059189					0.055857				
0.075279					0.044418				
0.039606					0.1005				
1.025901	0.594384	0.72557	0.55151	1.41115	0.658784	1.40794	1.176618	1.8362	2.44435

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.4311	1.7816	1.9482	1.9978	2.7192	0.89846	1.3691	1.0056	0.46369	1.2841
0.8402	0.83559	1.1271	1.9482	1.2983	0.34067	1.1361	0.74853	1.0056	0.87721
0.37713	0.49129	0.53134			1.1203	0.47381	0.062927		
1.0529	1.3379	0.75128			2.2595	1.242	0.36524		
1.9638	1.9452				0.58479	2.0426			
0.61383	3.8351				0.28898	2.2964			
0.50867	1.8024				0.33245	1.1625			
0.19511	1.7253				0.11092	1.5463			
0.17094					0.060587				
0.22693					0.059981				
0.1669					0.06637				
0.12062					0.099699				
0.1327					0.062516				
0.088692					0.04415				
0.042227					0.061415				
0.075163					0.06252				
0.500432	1.719298	1.08948	1.973	2.00875	0.403332	1.408601	0.545574	0.734645	1.080655

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.84973	1.4952	0.8311	1.2607	0.77981	2.3512	3.9132	9.4408	10.845	4.4544
0.88245	1.6902	0.86554	0.8311	0.56665	3.601	2.7833	9.4916	9.4408	10.562
5.1255	1.0903	0.7509			1.2496	2.5398	5.0166		
5.785	1.8871	1.0194			1.9047	1.5038	3.5644		
1.4632	2.1921				2.2083	1.2426			
0.22412	0.97741				0.51406	3.3031			
0.3787	0.18177				0.37619	2.8612			
0.21795	0.44052				0.26217	1.5598			
0.11773					0.19071				
0.084877					0.2654				
0.01466					0.11417				
0.028415					0.13343				
0.022069					0.19741				
0.019395					0.21214				
0.033466					0.39507				
0.025513					0.44488				
0.954548	1.244325	0.866735	1.0459	0.67323	0.901277	2.46335	6.87835	10.1429	7.5082

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.91123	2.6283	4.5269	2.2902	2.8986	0.89994	1.0585	0.25535	0.24233	0.55383
1.8032	0.75763	3.4082	4.5269	1.6588	1.2917	0.57834	0.32144	0.25535	1.2346
1.7192	1.2932	2.0809			1.193	0.38897	0.70826		
1.213	3.167	2.7875			1.5802	2.2348	0.50912		
1.0916	4.5037				0.41337	3.4738			
0.21785	4.0754				0.27786	2.3235			
0.2668	2.0639				0.37812	0.81273			
0.073564	0.87293				0.14745	0.627			
0.097189					0.12115				
0.10366					0.085226				
0.062599					0.022758				
0.079398					0.036765				
0.04084					0.013344				
0.08148					0.032474				
0.10859					0.055209				
0.059916					0.012228				
0.495632	2.420258	3.200875	3.40855	2.2787	0.41005	1.437205	0.448543	0.24884	0.894215

Case (10)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.4737	1.2077	1.2686	1.3823	1.7541	3.2062	3.7457	1.6597	1.1446	2.8964
1.5266	1.0009	0.83153	1.2686	2.2569	8.3513	4.9289	1.4745	1.6597	2.4327
5.7296	1.5129	0.78561			7.7169	4.6148	2.1614		
4.937	1.0378	1.0106			4.3658	6.7986	1.6546		
3.2282	2.632				4.2869	5.633			
0.42824	5.3022				1.4015	1.9025			
0.7421	5.3942				1.8246	4.2452			
0.97236	3.7556				1.1059	7.8934			
0.3655					0.95377				
0.36602					1.0046				
0.62847					0.54699				
0.45819					0.030712				
0.48191					0.15157				
0.58396					0.65085				
0.47854					0.44209				
0.40277					0.18141				
1.487698	2.730413	0.974085	1.32545	2.0055	2.263818	4.970263	1.73755	1.40215	2.66455

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
5.2956	1.3324	2.0092	1.6538	1.5926	1.4394	0.99707	1.5197	1.2982	2.0748
6.4518	1.8879	1.4208	2.0092	2.5717	2.4186	0.84266	1.2168	1.5197	2.0116
7.3265	3.2407	2.0081			6.8202	1.9441	1.4863		
7.4178	7.4965	0.87832			6.8007	2.8324	0.98557		
8.5552	8.0871				5.8569	3.9226			
1.2014	3.2694				0.70138	3.3321			
1.7698	3.6355				1.3716	3.7506			
1.2908	5.1395				1.3622	3.5409			
0.70996					1.3622				
0.42376					0.45827				
0.73163					0.24004				
0.3048					0.84771				
0.28516					0.48905				
0.5879					0.54275				
0.53343					0.65735				
0.28713					0.51003				
2.698292	4.261125	1.579105	1.8315	2.08215	1.992399	2.645304	1.302093	1.40895	2.0432

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.512	1.1401	1.6353	1.9565	0.94251	7.5314	2.6728	4.6755	4.8613	1.0094
0.94724	0.99771	2.2029	1.6353	2.6254	6.4186	4.2606	1.9753	4.6755	3.3082
3.207	2.1927	1.2149			5.3136	8.3676	1.9405		
4.0032	2.2854	0.84031			4.5936	12.372	0.78707		
2.0682	2.0413				5.0356	8.2194			
0.46757	4.4729				0.40116	2.5052			
0.25925	6.2225				0.46485	3.4524			
0.52611	8.4953				0.34741	5.4825			
0.60416					0.74459				
0.44206					0.7712				
0.41009					0.42742				
0.1665					0.41245				
0.2652					0.17097				
0.40462					0.1777				
0.22858					0.2981				
0.13149					0.22055				
1.165204	3.480989	1.473353	1.7959	1.783955	2.083075	5.916563	2.344593	4.7684	2.1588

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.5036	2.307	2.9058	3.0896	0.80977	1.6756	1.7325	1.9024	2.026	0.96856
3.0009	2.6318	3.0243	2.9058	3.5277	1.0354	1.3901	2.7752	1.9058	3.0573
4.3022	4.1905	1.8194			2.4861	2.7004	1.5751		
5.933	10.988	0.89812			3.0756	4.6865	0.93102		
7.8011	10.14				3.1865	4.2598			
0.48654	4.069				0.32227	3.9639			
0.81089	3.0381				0.32465	4.2601			
0.40904	3.1743				0.45635	4.7565			
0.71942					0.62131				
0.59948					0.5764				
0.52492					0.44755				
0.21554					0.15643				
0.27784					0.33866				
0.50334					0.52774				
0.33304					0.25641				
0.14117					0.1462				
1.785126	5.067338	2.161905	2.9977	2.168735	0.977073	3.468725	1.79593	1.9659	2.01293

Case (11)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.01	4.1012	14.479	24.696	2.6482	1.0921	1.7654	3.7976	6.221	2.4558
2.5989	8.3325	7.3088	14.479	17.694	1.6787	2.2031	1.8972	3.7976	5.6972
6.642	5.2308	4.5985			1.3386	2.3605	1.3416		
5.725	2.6446	1.4409			3.5868	2.7406	2.7333		
17.764	2.9514				1.3459	1.0278			
0.80568	2.215				0.25622	2.7956			
0.4577	3.2106				0.3472	2.9582			
0.65518	3.7291				0.34653	1.5953			
0.26007					0.26209				
0.42982					0.16596				
0.16472					0.16773				
0.22409					0.22333				
0.15394					0.17492				
0.11796					0.305				
0.070736					0.15072				
0.070553					0.077767				
2.384397	4.0519	6.9568	19.5875	10.1711	0.719973	2.180813	2.442425	5.0093	4.0765

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.4615	2.3347	3.921	7.045	2.658	2.7129	3.0512	5.307	5.0479	2.0567
2.624	5.935	4.2604	3.921	7.9673	2.2474	4.9813	4.8017	5.307	6.8291
3.2913	5.497	3.4768			4.6625	5.4028	4.2972		
6.3754	3.4242	4.2034			7.1362	2.3603	5.2533		
1.2988	3.6598				2.1415	1.8445			
0.24515	4.1023				0.19322	3.8597			
0.35088	3.7296				0.15512	2.9797			
0.53872	4.5436				0.42774	3.8321			
0.35584					0.29352				
0.13146					0.14987				
0.26848					0.07815				
0.15131					0.097145				
0.14066					0.15402				
0.24954					0.17403				
0.1078					0.029478				
0.097733					0.094123				
1.168036	4.153275	3.9654	5.483	5.31265	1.296682	3.53895	4.9148	5.17745	4.4429

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.6606	6.6698	24.518	42.106	2.6807	2.2875	4.7995	8.8879	14.179	2.9965
4.4776	8.4355	9.8983	24.518	20.44	3.3103	5.1183	7.4045	8.8879	13.302
10.383	3.8841	7.1346			4.8868	6.7954	5.9857		
12.026	2.3006	5.2846			4.292	2.6594	3.1069		
18.556	2.923				2.2552	2.4232			
0.197	1.1989				0.67217	1.9864			
0.64721	3.4847				0.52395	2.9645			
0.37549	3.6233				0.48394	3.3581			
0.15352					0.33758				
0.38353					0.1437				
0.23205					0.30192				
0.35842					0.40282				
0.18753					0.28523				
0.097203					0.22848				
0.073613					0.32965				
0.067648					0.20873				
3.179776	4.064988	11.70888	33.312	11.56035	1.309373	3.7631	6.34625	11.53345	8.14925

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.0854	11.168	9.7494	22.484	3.504	3.9649	6.0813	18.397	17.925	5.6702
4.2434	18.17	8.6815	9.7494	20.597	3.2242	6.1149	18.065	18.397	13.211
7.1411	10.508	13.761			8.9884	6.1663	12.349		
5.6983	4.0979	11.063			8.14631	2.7729	6.0943		
2.6267	6.0965				3.7217	1.9051			
0.82147	3.0409				0.57482	1.3533			
0.34293	2.4887				0.29792	2.4589			
0.66491	3.5354				0.56146	4.3549			
0.37442					0.29271				
0.48215					0.24647				
0.31655					0.32089				
0.63824					0.50937				
0.29949					0.24686				
0.32522					0.36301				
0.30948					0.17562				
0.53198					0.12968				
1.743859	7.388175	10.81373	16.1167	12.0505	1.98527	3.90095	13.72633	18.161	9.4406

Case (12)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
18.512	7.5986	12.335	11.812	19.54	3.6111	28.237	19.181	62.215	42.978
15.153	20.416	10.13	12.335	31.814	2.329	39.171	28.947	19.181	122.68
3.9554	16.242	19.066			1.2414	15.87	27.531		
4.4404	9.7822	10.455			2.096	19.561	10.972		
4.1693	5.8736				1.0753	7.9918			
0.28183	7.9972				0.56481	3.5388			
1.6314	7.0981				1.0024	2.2113			
1.3568	8.4154				0.76029	2.3318			
0.41812					0.47546				
0.27291					0.50917				
0.12198					0.30002				
0.1539					0.28542				
0.13626					0.40785				
0.16919					0.27102				
0.065781					0.2604				
0.12869					0.19956				
3.185435	10.42789	12.9965	12.0735	25.677	0.961825	14.86409	21.65775	40.698	82.829

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.1542	14.752	8.0522	33.736	17.265	11.493	8.7906	7.2063	15.231	19.233
4.3586	27.649	4.9614	8.0522	49.754	9.2889	19.259	7.0737	7.2063	33.63
1.727	19.035	6.3107			3.0203	15.213	13.123		
1.8868	12.524	7.1818			2.9834	11.483	7.6623		
0.47368	4.6336				1.4648	4.8759			
0.30699	2.8927				0.1271	4.2407			
0.70098	3.1592				1.1365	4.5768			
0.6799	3.0106				1.0053	5.1841			
0.79409					0.48022				
0.81797					0.28133				
0.17572					0.11009				
0.15163					0.13548				
0.22407					0.16766				
0.23277					0.1556				
0.11278					0.057441				
0.14467					0.14953				
1.058866	10.95701	6.626525	20.8941	33.5095	2.003541	9.202888	8.766325	11.21865	26.4315

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
18.07	4.632	6.0991	11.751	5.2393	4.0561	4.6884	25.783	90.547	38.402
16.071	12.324	6.8695	6.0991	18.373	4.2784	6.0821	19.466	25.783	134.99
3.9704	14.387	10.266			2.0786	6.1034	11		
4.1562	7.91	16.042			1.8874	11.533	9.0021		
3.9602	7.4257				0.98483	10.921			
1.0478	11.998				1.3505	2.9836			
0.90724	3.6034				1.0018	3.2253			
0.76472	12.153				0.7638	3.1977			
0.4823					0.41811				
0.51169					0.60221				
0.23707					0.46284				
0.25977					0.32655				
0.48448					0.4125				
0.40316					0.51756				
0.38173					0.54146				
0.63802					0.68234				
3.271611	9.304138	9.81915	8.92505	11.80615	1.272813	6.091813	16.31278	58.165	86.696

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
5.0645	4.794	5.984	21.506	8.4892	11.165	5.3558	2.4302	10.445	5.7623
6.3454	9.5681	4.0888	5.984	31.667	10.285	8.6694	4.6191	2.4302	17.931
2.0952	13.348	4.2307			3.389	11.364	7.7875		
1.506	10.096	6.3646			2.3515	6.9891	8.7254		
1.185	5.4061				2.5748	2.167			
0.86861	0.83431				1.0133	2.8359			
0.71816	1.912				0.75656	2.2707			
0.63544	3.6799				0.43987	8.8384			
0.36854					0.4669				
0.69416					0.65423				
0.3672					0.27162				
0.20641					0.23079				
0.36188					0.42518				
0.37149					0.36445				
0.45591					0.36988				
0.69022					0.61674				
1.370883	6.204801	5.167025	13.745	20.0781	2.210926	6.061288	5.89055	6.4376	11.84665

Case (13)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
24.416	1.9098	4.4418	7.3393	1.7901	13.981	1.6787	5.2465	10.087	2.8332
11.321	3.9845	3.9845	4.4418	1.3969	4.4105	4.2636	3.0907	5.2465	5.9659
2.7028	2.3665	2.3665			1.5467	3.6822	2.6891		
2.8586	1.798	1.798			3.4643	1.8536	1.9983		
3.2954					4.5248	1.5245			
1.3106					0.48834	3.7629			
1.0202					0.50298	5.7379			
0.40027					0.28828	6.8653			
0.31549					0.14074				
0.29684					0.14074				
0.091013					0.40203				
0.14265					0.05156				
0.063464					0.071306				
0.07089					0.17457				
0.076878					0.17738				
0.073159					0.012709				
					0.046672				
3.028453	2.5147	3.1477	5.89055	1.5935	1.789683	3.671088	3.25615	7.66675	4.39955

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
17.541	3.7835	3.2591	7.6726	2.4539	22.859	3.4956	5.8035	9.892	2.8126
5.7894	7.1676	4.4618	3.2591	6.1362	8.1144	4.6903	6.4022	5.8035	5.538
2.4137	7.0099	3.5623			1.7935	4.8776	3.6167		
3.7409	4.3965	3.4707			2.0013	4.7508	2.543		
5.3689	2.863				3.2794	3.7634			
1.2521	7.217				1.698	5.923			
0.88163	9.8997				1.0528	8.8139			
0.69788	9.4992				0.23321	9.5611			
0.68199					0.848				
0.61595					0.91936				
0.080349					0.076591				
0.13326					0.076591				
0.3193					0.071657				
0.32549					0.11347				
0.081195					0.14474				
0.1355					0.13124				
					0.16243				
2.503659	6.47955	3.688475	5.46585	4.29505	2.563276	5.734463	4.59135	7.84775	4.1753

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
35.25	3.1903	6.4126	10.083	5.7941	28.032	1.9477	9.7953	11.712	4.1259
9.813	2.1638	6.6147	6.4126	6.6493	8.4974	2.412	6.2457	9.7953	10.048
4.0709	2.5355	2.3075			2.5237	3.2467	4.7705		
5.7615	2.668	4.2966			3.2249	1.8071	2.6559		
4.1957	2.0729				3.1578	4.3772			
0.70209	1.7584				1.1669	3.4602			
1.4491	5.9351				1.9724	5.4909			
1.3678	17.665				1.6229	15.891			
0.84791					0.88028				
0.55979					0.51812				
0.28656					0.19646				
0.41582					0.7188				
0.3748					0.3839				
0.37231					0.161				
0.20104					0.18769				
0.25582					0.48142				
4.120259	4.748625	4.90785	8.2478	6.2217	3.357854	4.8291	5.86685	10.75365	7.08695

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
33.97	3.1232	5.2742	6.3182	2.674	35.425	1.3408	4.9794	8.2162	4.5556
10.248	6.1166	7.1648	5.2742	5.6447	12.16	4.237	6.0042	4.9794	6.6775
2.959	9.4469	6.7029			3.2209	4.7869	5.2268		
3.3487	4.6496	6.3567			3.9706	3.3987	4.8881		
3.7	4.0293				4.0367	2.0785			
1.7951	6.6985				1.1662	4.1027			
2.4972	11.582				1.7921	8.9084			
1.913	20.973				1.2694	18.93			
0.75882					0.65805				
0.4949					0.48305				
0.23293					0.22693				
0.58041					0.27975				
0.56368					0.28356				
0.35684					0.39594				
0.13308					0.1561				
0.39284					0.23097				
3.996531	8.327388	6.37465	5.7962	4.15935	4.109703	5.972875	5.274625	6.5978	5.61655

Case (14)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.5155	1.087	2.2255	2.9401	0.23967	2.5766	5.7682	13.035	37.439	4.9846
3.1174	2.1711	1.2554	2.2255	2.8358	7.3406	2.1424	6.6929	13.035	29.184
7.6464	1.4886	1.2422			6.366	3.1151	16.994		
7.1964	1.863	0.7585			1.8359	1.7336			
1.668	0.61057				0.89289	1.6151			
0.34079	1.0507				0.51239	1.0465			
0.23773	1.8008				0.29015	1.2937			
0.10112	2.0245				0.1945	2.6068			
0.11578					0.34581				
0.27321					0.33069				
0.36824					0.29335				
0.23679					0.26504				
0.077458					0.33172				
0.097993					0.29054				
0.17067					0.19114				
0.22748					0.20929				
1.461935	1.512034	1.3704	2.5828	1.537735	1.391663	2.415175	12.24063	25.237	17.0843

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.1167	2.2847	9.9267	15.642	2.5318	1.1698	1.3375	1.0665	5.1791	0.38844
5.9979	2.4052	4.4668	4.9267	12.121	4.0659	1.4213	1.2892	1.0665	4.8405
6.2464	2.4198	8.3931			5.2975	1.1022	2.64		
1.7376	0.88259	7.9061			1.6917	1.0682	2.5157		
0.94109	1.4071				0.7287	1.0333			
0.77613	1.6415				0.49131	1.5551			
0.68956	2.3037				0.59941	2.2663			
0.34759	4.2232				0.27498	2.5815			
0.562.3					0.32385				
0.62266					0.36257				
0.25926					0.31275				
0.17459					0.17329				
0.30529					0.18487				
0.27468					0.1933				
0.32286					0.21977				
0.29727					0.24879				
1.473972	2.195974	7.673175	10.28435	7.3264	1.021156	1.545675	1.87785	3.1228	2.61447

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.1679	0.88076	5.5346	7.715	3.9408	6.6751	17.57202	16.72	103.79	42.061
4.6153	3.5706	0.90264	5.5346	7.0807	12.9	6.9146	30.175	16.72	142.31
9.2556	3.955	1.7029			11.424	5.2577	70.559		
9.5583	1.7245	1.5317			3.0516	3.5258	53.723		
2.5558	0.50498				2.019	2.3767			
0.69041	1.4657				0.47038	2.3146			
0.2876	2.5421				0.26788	6.2565			
0.24099	3.8846				0.26586				
0.20314					0.349				
0.24416					0.52066				
0.19611					0.67519				
0.25134					0.34629				
0.15205					0.33182				
0.13538					0.19676				
0.22478					0.34102				
0.24447					0.35921				
2.063958	2.31603	2.41796	6.6248	5.51075	2.512111	6.316846	42.79425	60.255	92.1855

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
6.4665	3.4891	5.3769	28.22	13.948	1.5553	3.0265	3.8702	6.4198	13.529
15.212	3.6716	8.3619	5.3769	37.571	6.7855	4.2256	9.3461	3.8702	25.487
11.456	5.326	18.127			6.1396	5.4828	10.217		
3.8633	3.3408	12.353			2.4289	1.9008	7.3063		
2.7854	3.5623				1.5759	2.9483			
0.79128	4.16				1.0072	3.1846			
0.48481	3.3598				0.091278	4.6141			
0.45637	4.9435				0.49203	4.2994			
0.83324					0.9593				
0.93059					0.73244				
0.63036					0.69235				
0.32848					0.72183				
0.21158					0.39586				
0.17814					0.68316				
0.33513					0.46178				
0.30646					0.48047				
2.829353	3.981638	11.0547	16.79845	25.7595	1.674108	3.710263	7.6849	5.145	19.508

Case (15)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
7.478	12.672	82.94	61.894	14.68	8.6882	50.695	355.48	409.38	51.842
6.2556	9.3094	103.79	82.94	39.679	12.389	65.413	722.86	355.48	138.84
2.8471	10.998	52.648			4.9758	30.3	287.68		
3.0768	10.003	20.433			8.3922	29.209	55.626		
6.1759	14.583				8.2849	19.2			
1.9616	5.9398				1.9726	17.184			
2.2548	5.8381				2.14	10.026			
1.1401	3.9234				1.4477	8.5188			
0.48016					0.94979				
0.8292					1.181				
0.69937					0.91435				
0.21654					1.2829				
0.36901					0.63309				
0.39921					0.5314				
0.34667					0.74565				
0.68481					0.72532				
2.200929	9.158338	64.95275	72.417	27.1795	3.453369	28.81823	355.4115	382.43	95.341

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
10.198	26.117	479.52	217.22	28.006	5.4568	14.646	200.49	136.3	14.706
6.5359	51.619	777.83	479.52	136.19	4.53	19.222	265.11	200.49	117.72
4.7952	28.157	448.13			3.3639	11.651	209.39		
10.227	19.542	82.459			4.8768	12.652	43.473		
8.6598	18.916				6.576	9.9124			
1.5092	13.292				1.7631	3.2638			
2.9575	7.4947				2.941	5.3632			
1.3327	7.6062				1.002	3.8145			
0.44338					0.4594				
1.2781					1.021				
0.64284					0.70287				
0.94969					0.47019				
0.6287					0.36486				
0.62131					0.525				
0.53799					0.42688				
0.8784					0.84434				
3.262232	21.59299	446.9848	348.37	82.098	2.207759	10.06561	179.6158	168.395	66.213

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
9.8127	19.196	182.95	109.8	6.931	6.7713	39.608	444.79	404.86	25.791
5.2175	5.1939	125.5	182.95	23.751	8.0925	55.632	182.33	444.79	118.41
5.274	5.3424	28.73			10.061	32.135	89.135		
4.9153	11.887	27.244			7.2614	22.45	48.37		
3.3732	10.25				3.1297	20.743			
1.08	4.8211				1.4401	7.5633			
1.2343	3.0834				1.9506	6.7125			
1.7131	4.7853				1.304	3.161			
0.41902					1.0208				
0.38986					1.1039				
0.25828					0.39056				
0.26608					0.55465				
0.32977					0.67959				
0.23179					0.81673				
0.25096					0.82074				
0.20781					0.24704				
2.185854	8.069888	91.106	146.375	15.341	2.852788	23.5006	191.1563	424.825	72.1005

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
9.2506	43.167	510.24	294.59	21.707	6.0255	11.112	119.36	112	8.0743
8.1214	48.181	476.58	510.24	140.95	3.8347	14.133	160.39	119.36	77.6
11.513	28.519	203.85			8.6022	13.975	83.439		
11.103	20.099	57.319			4.8441	10.788	25.546		
8.0593	15.677				4.6008	8.7457			
0.9103	5.8786				0.97949	3.1866			
2.71	2.1637				3.0761	1.8594			
1.6244	6.6971				2.0994	3.2614			
0.27517					0.71314				
0.58932					1.3924				
0.69288					0.26016				
0.74344					0.2879				
0.44604					0.43408				
0.27922					0.28004				
0.26266					0.29921				
0.14286					0.27925				
3.545224	21.2978	311.9973	402.415	81.3285	2.375529	8.382638	97.18375	115.68	42.83715

Case (16)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.9585	7.3607	11.311	19.962	1.5633	1.4911	7.1368	37.265	50.002	9.1011
0.80764	6.297	20.878	11.311	8.8483	0.70773	5.8838	16.648	37.265	37.26
3.6015	10.741	8.049			0.96992	6.9277	1.771		
2.6077	4.2426	4.1827			1.7944	8.5605	3.5062		
13.056	5.1281				3.8838	5.1438			
1.1729	2.7689				1.0414	3.4071			
1.4835	0.58668				0.91642	2.0075			
1.6494	1.9762				0.63585	1.6498			
1.2698					0.65851				
0.70369					1.0087				
0.19539					1.1531				
0.084171					0.61621				
0.099019					0.5351				
0.14452					0.20178				
0.065641					0.30723				
0.37999					0.52558				
1.89246	4.887648	11.10518	15.6365	5.2058	1.027927	5.089625	14.79755	43.6335	23.18055

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.8129	6.2545	16.583	17.794	3.0165	2.6384	4.9336	5.8224	16.28	2.9107
0.50394	8.8452	9.7775	16.583	14.816	1.0324	6.4097	10.279	5.8224	12.971
1.2773	17.952	1.9958			1.4796	14.256	2.4987		
1.7043	13.336	6.6828			1.9445	6.404	6.6073		
4.7067	4.6095				7.267	2.0103			
0.91088	1.5172				0.59109	1.4518			
0.82845	1.3423				1.1381	0.68898			
0.9279	2.8069				1.1664	1.6281			
0.66884					0.66826				
1.2275					0.44596				
1.2615					0.47283				
0.70832					0.31533				
0.48524					0.21453				
0.55959					0.29093				
0.44809					0.15554				
0.3294					0.28356				
1.210053	7.08295	8.759775	17.1885	8.91625	1.256527	4.72281	6.30185	11.0512	7.94085

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
5.2803	4.0756	45.8	44.521	10.791	3.6856	2.8989	21.857	45.873	21.92
2.4668	3.0057	27.963	45.8	31.356	3.8052	10.585	19.02	21.857	63.882
1.6993	3.3296	9.6045			1.4226	20.799	3.3123		
0.48136	1.6555	3.5752			1.3291	20.465	7.4679		
13.288	3.959				1.7352	11.185			
2.9822	1.6798				3.3138	4.2047			
2.7981	1.1976				1.8145	1.7433			
4.3352	4.627				0.81311	1.5413			
2.0077					1.6572				
1.2448					1.606				
0.53304					0.95866				
0.32363					0.38621				
0.25661					0.071887				
0.24773					0.33921				
0.67372					0.50196				
					0.62782				
2.574566	2.941225	21.73568	45.1605	21.0735	1.504254	9.177775	12.9143	33.865	42.901

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
5.7657	5.4921	30.502	46.638	17.02	4.4623	2.8066	27.179	43.219	12.94
6.9645	19.309	12.404	30.502	51.206	9.2813	10.532	14.14	27.179	39.27
3.3439	47.519	9.1167			1.875	24.158	5.371		
1.3361	39.762	22.621			1.8215	17.623	11.599		
2.5375	17.362				4.0395	6.961			
4.9453	3.3497				3.6783	4.5765			
2.3573	1.2066				2.0388	1.3622			
1.1615	1.6751				1.5349	1.6514			
0.84478					0.85358				
1.1603					2.4459				
1.0756					0.52708				
0.47442					0.63018				
0.27258					0.53924				
0.68433					0.41349				
0.85485					0.55897				
0.50587					0.3671				
2.142783	16.95944	18.66093	38.57	34.113	2.191696	8.708838	14.57225	35.199	26.105

Case (17)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	theta	Pdelta
4.2012	25.946	20.188	25.745	7.3014	17.367	2.5504	21.584	70.758	10.095
13.449	11.208	12.335	20.188	25	8.1329	10.053	15.241	21.584	38.275
22.498	6.581	20.19			4.9575	10.91	8.9442		
4.2933	6.4847	23.08			4.5942	19.504	3.4982		
9.9655	21.65				5.7239	23.523			
8.8436	25.651				1.3307	14.368			
1.2819	12.6				2.0585	13.777			
0.95229	3.6875				2.052	15.359			
0.69176					2.0801				
0.39835					1.8383				
0.35969					0.16681				
0.093504					0.11556				
0.21593					0.26487				
0.28866					0.36661				
0.23741					0.32207				
0.14912					0.13227				
4.244951	14.22603	18.94825	22.9665	16.1507	3.218956	13.75555	12.31685	46.171	24.185

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
11.651	2.4884	23.095	27.507	4.9957	4.4829	17.428	13.533	32.649	11.023
8.1157	3.8539	8.6763	23.095	9.856	12.874	8.5029	9.6676	13.533	30.896
4.0192	2.4451	3.8215			16.858	4.8132	6.9054		
2.3484	8.1972	5.3568			4.2017	5.2625	11.184		
1.8764	10.865				5.8503	15.984			
0.7079	7.0487				0.80844	11.98			
1.7185	3.4979				1.0049	7.5671			
1.7547	5.6113				0.65434	2.4571			
1.6279					0.52951				
1.4177					0.48351				
0.19062					0.18984				
0.13306					0.1843				
0.39504					0.27011				
0.57394					0.351				
0.48678					0.24646				
0.23923					0.13158				
2.328504	5.500938	10.2374	25.301	7.42585	3.070056	9.24935	10.3225	23.091	20.9595

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.849	7.1824	2.0325	13.968	4.3738	7.8169	4.5134	6.1555	21.195	3.5992
4.3849	3.8378	4.0827	2.0325	16.028	5.4611	6.6177	8.9177	6.1555	16.87
10.233	5.9879	6.7028			1.7331	2.4112	7.0603		
3.1928	7.8546	8.4183			2.192	8.2398	4.5865		
5.4099	7.0737				2.9652	7.7856			
0.89103	9.3353				0.70931	5.791			
0.74153	10.838				0.95631	3.4775			
0.70025	8.8485				1.6886	2.96			
0.68154					2.2984				
0.58516					1.3422				
0.56325					0.57459				
0.45298					0.4563				
0.29152					0.35147				
0.28155					0.48904				
0.16702					0.31396				
0.66719					0.17214				
2.130789	7.619775	5.309075	8.00025	10.2009	1.845039	5.224525	6.68	13.67525	10.2346

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
7.836	4.9221	9.4068	24.331	5.4829	4.2384	2.4553	11.065	14.165	4.1833
6.548	5.878	10.403	9.4068	19.565	4.2804	4.5925	12.39	11.065	10.676
2.1657	3.0882	6.5228			3.7535	2.1569	2.2844		
2.6118	10.176	5.2611			1.314	6.878	2.0901		
1.3059	15.712				0.95052	7.6154			
0.29105	9.4777				0.45254	5.0048			
0.93422	5.4317				0.63775	4.8047			
1.6901	4.1467				0.63853	3.3865			
1.5457					0.5916				
0.88444					0.46156				
0.47084					0.27009				
0.34673					0.41416				
0.22174					0.33958				
0.35113					0.25169				
0.20901					0.14657				
0.19588					0.091786				
1.725515	7.35405	7.898425	16.8689	12.52395	1.177042	4.611763	6.957375	12.615	7.42965

Case (18)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
42.951	3.3242	6.8102	10.101	0.36259	3.956	2.2218	5.1772	6.9469	1.4967
65.901	3.6001	5.0023	6.8102	4.3727	5.3903	1.4691	1.8296	5.1772	3.2344
32.022	1.7435	6.7906			15.405	1.6683	1.993		
18.891	3.1034	5.1365			17.551	1.4777	3.3439		
28.238	3.8719				18.984	1.6405			
0.83894	6.6132				0.52155	2.3087			
0.78628	8.0164				0.53995	3.5147			
1.0634	14.926				0.57367	5.1265			
0.60949					1.0173				
1.6863					0.55369				
0.32544					0.20436				
0.2311					0.16547				
0.2314					0.2464				
0.40564					0.27365				
0.39038					0.25281				
0.20209					0.12253				
12.17334	5.649838	5.9349	8.4556	2.367645	4.109855	2.428413	3.085925	6.06205	2.36555

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
5.2736	3.7375	10.944	17.899	1.1739	15.699	3.8459	10.609	15.838	1.0605
5.5141	1.626	4.3476	10.944	7.4133	15.259	1.9065	4.6651	10.609	7.3595
18.103	2.8651	5.6499			23.857	3.3296	5.8184		
20.933	2.9567	6.4344			19.368	3.5511	6.2944		
29.206	2.4881				33.832	3.4345			
0.65016	4.3792				0.63086	5.0766			
1.0579	6.4146				0.74658	7.2822			
1.3933	10.447				1.2422	12.759			
2.0546					1.3086				
1.2436					0.94966				
0.18866					0.29022				
0.17004					0.24716				
0.33107					0.27472				
0.28034					0.21599				
0.2818					0.21845				
0.16106					0.10004				
5.427639	4.364275	6.843975	14.4215	4.2936	7.139968	5.148175	6.846725	13.2235	4.21

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
62.933	1.2579	9.513	13.429	1.9721	2.8841	2.1028	7.6043	13.302	2.072
77.474	1.2117	6.13	9.513	8.489	5.0149	1.0087	2.6537	7.6043	6.9678
38.107	2.9231	6.9136			25.602	1.1718	2.9174		
13.571	3.4884	5.9027			18.172	0.93176	3.1419		
51.035	4.3002				24.07	2.0832			
0.6358	8.7978				0.69144	3.0187			
0.72073	14.921				0.57687	3.0017			
2.0965	28.38				1.1231	5.2326			
1.1255					1.1344				
0.77081					0.55164				
0.59879					0.33907				
0.49978					0.34088				
0.14951					0.19865				
0.51842					0.30894				
0.37095					0.23383				
0.23142					0.14756				
15.67739	8.160013	7.114825	11.471	5.23055	5.086836	2.318908	4.079325	10.45315	4.5199

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
5.5601	2.9909	11.14	20.086	3.1012	16.991	3.0198	13.129	22.934	2.1395
5.7785	1.4827	4.0792	11.14	12.939	16.444	2.3039	5.2121	13.129	11.544
23.022	1.9434	3.8784			27.669	3.3392	5.9399		
20.391	1.5065	4.1713			19.917	2.7802	5.977		
27.821	2.3406				39.226	3.6623			
0.81619	4.6886				0.81323	6.985			
0.85958	7.2072				1.0131	11.283			
1.5911	10.71				1.602	16.156			
1.4704					1.0863				
0.73843					0.52416				
0.36798					0.32281				
0.30295					0.23573				
0.2907					0.31184				
0.43004					0.47594				
0.3382					0.28984				
0.22541					0.18303				
5.625224	4.108738	5.817225	15.613	8.0201	7.944061	6.191175	7.5645	18.0315	6.84175

Case (19)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
36.154	5.5732	2.7613	1.5546	1.1163	3.0917	1.3222	6.4907	5.2967	1.4326
18.073	11.625	6.7927	2.7613	2.1026	0.6785	2.2543	3.6908	6.4907	2.3611
8.4389	4.0345	3.6162			0.32472	1.379	3.169		
1.5283	2.5333	0.20025			0.32035	0.7243	3.999		
1.629	3.0008				0.3788	2.2424			
0.23488	10.786				0.12741	1.9602			
0.33651	12.981				0.29273	1.3292			
0.37849	18.439				0.21859	3.0209			
0.15909					0.15866				
0.32161					0.11169				
0.12293					0.07831				
0.089488					0.055066				
0.05796					0.046855				
0.047511					0.052916				
0.094933					0.071492				
0.02869					0.021561				
4.230956	8.6216	3.342613	2.15795	1.60945	0.376834	1.779063	4.337375	5.8937	1.89685

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.3485	1.1574	4.5916	3.3123	1.097	12.771	1.4478	2.8681	2.0772	0.87966
1.6942	1.9331	3.5845	4.5916	1.9453	5.741	3.3994	4.3479	2.8681	2.4364
0.32813	1.5189	3.2372			2.1026	2.1502	2.6165		
0.68428	0.52315	3.7634			0.86724	1.0309	1.5168		
0.56406	0.825				0.81366	1.0401			
0.24542	2.1533				0.30615	3.8521			
0.37363	3.1076				0.43435	4.987			
0.26091	4.3514				0.39342	8.4829			
0.19693					0.20523				
0.14951					0.21691				
0.078494					0.078696				
0.071593					0.10038				
0.045583					0.055504				
0.062625					0.049011				
0.078444					0.08385				
0.025552					0.025909				
0.575491	1.946231	3.794175	3.95195	1.52115	1.515307	3.2988	2.837325	2.47265	1.65803

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
40.428	6.7798	2.5607	4.1211	2.9203	13.475	4.7051	8.6708	7.9413	4.7717
24.423	11.876	5.998	2.5607	2.4002	4.9978	3.1084	4.1248	8.6708	6.7137
10.679	4.6308	4.4302			1.9224	2.0115	4.6442		
2.8616	5.07	0.45434			1.6771	0.84948	5.3222		
1.9737	7.4419				0.45873	2.4245			
0.24557	14.489				0.50615	3.1442			
0.48077	21.592				0.43996	3.3233			
0.55234	22.015				0.43679	6.0919			
0.60432					0.21666				
0.74852					0.086877				
0.20344					0.16634				
0.069573					0.04846				
0.056809					0.12505				
0.11936					0.10111				
0.065835					0.081913				
0.047875					0.039039				
5.222482	11.73681	3.36081	3.3409	2.66025	1.548711	3.207298	5.6905	8.30605	5.7427

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
6.402	2.2637	7.2274	4.8704	2.801	15.145	1.7736	3.2286	2.7003	3.3389
3.6234	1.817	4.7097	7.2274	4.2741	11.989	4.4931	4.1086	3.2286	3.3396
0.82721	1.8726	4.6736			3.2249	2.1495	4.9366		
1.172	0.58141	3.756			0.78854	2.451	1.3756		
0.78276	0.75088				0.95804	2.9273			
0.34191	2.5863				0.30894	4.8592			
0.64314	3.9232				0.6675	8.4294			
0.63249	4.0461				0.79337	8.5537			
0.335					0.62422				
0.18427					0.66111				
0.13341					0.14745				
0.049608					0.057255				
0.092223					0.071731				
0.069239					0.10546				
0.019227					0.041404				
0.013877					0.021917				
0.95761	2.230149	5.091675	6.0489	3.53755	2.225365	4.4546	3.41235	2.96445	3.33925

Case (20)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.5853	1.3309	6.5212	5.4381	1.0775	1.2839	0.98398	6.2632	21.148	9.3438
2.9754	1.5505	3.5911	6.5212	4.2495	1.7629	0.78642	2.4958	6.2632	28.14
4.9972	2.8874	2.1718			4.0915	1.325	0.83849		
3.7021	1.125	1.3272			4.8009	1.0355	1.7588		
2	1.2512				2.7648	0.39464			
0.95889	1.5924				0.43838	0.44402			
0.97671	1.7605				0.29517	1.1068			
0.43082	3.3701				0.37183	1.9799			
0.63328					0.46792				
0.52913					0.44205				
0.13147					0.11174				
0.20835					0.2125				
0.30266					0.23377				
0.31926					0.22443				
0.29583					0.23849				
0.26766					0.2477				
1.457129	1.8585	3.402825	5.97965	2.6635	1.124249	1.007033	2.839073	13.7056	18.7419

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.9228	0.90093	3.3616	7.7669	2.1771	3.025	0.95605	4.7951	6.1343	0.83084
1.6122	1.0747	1.2987	3.3616	7.4645	1.8993	1.4135	2.7375	4.7951	4.281
3.2842	2.4463	1.1901			2.6395	2.7064	1.9964		
4.5472	1.2198	1.3874			3.0472	0.87391	1.022		
2.856	0.78211				1.801	0.94735			
0.6251	1.173				0.57469	1.4734			
0.51751	1.5319				0.66116	1.4011			
0.39105	1.8332				0.44883	1.8392			
0.64732					0.76563				
0.49201					0.56018				
0.13756					0.16421				
0.19766					0.18687				
0.13734					0.15828				
0.27146					0.25623				
0.23299					0.29645				
0.17601					0.20848				
1.128026	1.370243	1.80945	5.56425	4.8208	1.043313	1.451364	2.63775	5.4647	2.55592

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.865	0.98962	5.8996	2.9497	1.3373	0.85431	1.4664	5.2608	24.837	14.524
4.4429	2.5055	4.3877	5.8996	3.6452	0.84263	2.0299	2.2384	5.2608	38.238
7.867	2.2482	2.7574			4.6397	2.0355	3.0782		
4.4461	1.415	1.352			6.2365	0.3811	2.7785		
1.7881	1.0036				3.3342	0.94095			
0.52985	0.78038				0.23538	0.64172			
0.45941	0.76777				0.24843	0.46411			
0.56464	2.2253				0.25625	0.74976			
0.37462					0.14082				
0.30383					0.12926				
0.22938					0.073965				
0.16755					0.056892				
0.25798					0.18082				
0.16873					0.19638				
0.16999					0.092381				
0.30794					0.2041				
1.621439	1.491921	3.599175	4.42465	2.49125	1.107626	1.08868	3.338975	15.0489	26.381

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.1263	0.95266	2.6085	5.7137	2.9045	1.9414	0.90335	4.0828	4.7742	2.3454
0.99141	1.4913	2.4729	2.6085	7.2953	1.7716	1.6948	4.9599	4.0828	4.5534
4.5393	1.8614	2.7637			4.4051	2.0813	3.1969		
5.5818	0.66119	2.0165			4.5748	0.90007	1.2554		
3.3079	0.95438				3.582	1.1985			
0.3424	0.67136				0.40858	0.83284			
0.29169	0.6799				0.33832	0.63077			
0.31598	0.54143				0.47252	1.0195			
0.24669					0.36745				
0.16991					0.22523				
0.047953					0.098962				
0.063597					0.12293				
0.16877					0.23261				
0.22436					0.2372				
0.10409					0.14174				
0.27564					0.27264				
1.112362	0.976703	2.4654	4.1611	5.0999	1.199568	1.157641	3.37375	4.4285	3.4494

Case (21)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
32.582	4.8212	12.826	37.826	7.2074	34.011	10.932	7.6426	22.868	7.3572
9.2645	4.6889	6.3675	12.826	30.812	8.2907	9.2849	9.8643	7.6426	42.344
13.044	3.0227	9.3505			3.3195	9.9462	3.9419		
12.8	6.5504	3.0261			1.7853	19.552	11.465		
12.069	9.6399				3.6306	10.233			
0.31676	17.387				0.87976	2.905			
0.41749	18.054				0.27317	3.2038			
0.27416	21.647				0.48142	35.189			
0.60886					0.49863				
0.41999					0.3233				
0.45134					0.42743				
0.1677					0.60925				
0.19284					0.46606				
0.2533					0.21253				
0.2712					0.77232				
0.27461					0.80546				
5.212984	10.72639	7.892525	25.326	19.0097	3.549152	12.65574	8.22845	15.2553	24.8506

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
52.806	12.274	19.535	38.843	5.2002	44.723	6.4987	25.432	54.25	12.382
16.489	11.273	8.9942	19.535	37.721	13.778	8.2904	6.401	25.432	50.201
9.6817	10.935	5.5278			10.68	6.0981	7.9323		
4.6029	15.105	11.117			6.4015	7.3923	6.3815		
3.2768	8.9733				4.5863	9.8674			
0.57577	9.155				0.19277	18.737			
0.27644	17.21				0.24397	25.071			
0.54127	48.022				0.30635	29.876			
0.80611					0.58581				
0.4015					0.6356				
0.50899					0.60026				
0.35899					0.21083				
0.30182					0.22531				
0.044917					0.17603				
0.23511					0.25203				
0.24525					0.24911				
5.697035	16.61841	11.2935	29.189	21.4606	5.240429	13.97886	11.5367	39.841	31.2915

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
11.688	20.644	9.6744	26.766	10.313	28.614	11.07	5.2729	23.878	5.9869
4.30262	19.478	10.865	9.6744	35.214	7.7635	3.6654	7.635	5.2729	35.082
6.0073	9.3948	6.551			15.105	10.28	11.221		
12.467	19.523	5.0365			6.6769	24.717	18.819		
15.759	30.184				5.9285	37.991			
0.92348	23.963				0.5949	44.274			
0.72834	13.332				0.32147	49.05			
0.58599	18.508				0.32203	48.334			
0.51721					0.23565				
0.69849					0.45878				
0.036432					0.15453				
0.28053					0.59552				
0.49595					0.86604				
0.19204					0.31273				
0.086946					0.42746				
0.10312					0.33952				
3.429528	19.37835	8.031725	18.2202	22.7635	4.294783	28.67268	10.73698	14.57545	20.53445

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
38.866	3.8708	3.1506	27.443	6.8234	14.3	14.071	12.446	36.438	15.659
2.2328	3.8397	19.428	3.1506	38.969	3.9121	15.928	21.403	12.446	56.038
7.1699	13.241	15.765			5.8108	6.8061	8.9969		
4.3338	32.93	13.764			18.087	19.303	7.1817		
1.266	46.737				17.95	39.334			
0.54408	45.674				0.92191	38.178			
0.9588	44.886				1.2269	24.024			
0.32442	54.128				0.62908	28.275			
0.15385					0.25802				
0.31452					0.368				
0.080966					0.047205				
0.62052					0.19833				
1.0469					0.6734				
0.20144					0.23099				
0.4753					0.18072				
0.45546					0.18487				
3.690297	30.66331	13.0269	15.2968	22.8962	4.061208	23.23989	12.5069	24.442	35.8485

Case (22)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
6.5237	4.7599	7.6886	13.392	4.9952	3.0052	2.3419	19.105	14.392	9.8553
3.9322	2.2053	2.5398	7.6886	8.8372	5.2114	1.7493	11.869	19.105	12.963
1.9669	1.7563	3.6487			8.8575	2.1461	4.9986		
2.8324	1.2108	2.4839			4.088	1.6226	4.0405		
2.2558	4.0438				1.3692	1.7813			
1.7013	6.0734				1.6865	1.1155			
0.9362	2.2118				0.93824	1.2167			
1.6102	4.1316				0.91515	2.2433			
1.4375					1.3659				
1.073					1.3239				
0.24518					0.39446				
0.30176					0.26096				
0.14874					0.22072				
0.15319					0.20996				
0.054134					0.13436				
0.055624					0.047451				
1.576739	3.299113	4.09025	10.5403	6.9162	1.876806	1.777088	10.00328	16.7485	11.40915

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.2692	2.5534	11.654	12.109	5.5251	5.139	3.345	7.2902	9.7343	5.0772
5.8925	1.7903	6.3084	11.654	8.0666	3.6724	1.718	3.9959	7.2902	6.728
8.6781	3.956	3.208			4.0587	2.3815	2.2357		
4.2702	2.9954	3.2115			3.3847	2.5257	2.6192		
1.3529	2.4222				1.9155	2.5305			
1.9689	2.0179				1.8723	2.4897			
1.6358	1.6166				1.0509	1.101			
2.195	4.116				1.8883	4.7151			
2.255					2.0492				
1.3731					0.80027				
0.30194					0.16993				
0.34362					0.30116				
0.19757					0.18665				
0.12361					0.1756				
0.057199					0.054487				
0.052599					0.033564				
2.185452	2.683475	6.095475	11.8815	6.79585	1.672041	2.600813	4.03525	8.51225	5.9026

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
8.8663	11.517	17.602	18.872	15.349	5.8345	4.438	22.851	18.805	21.463
12.358	6.181	9.6839	17.602	22.634	8.5163	1.4419	15.702	22.851	17.751
14.296	3.1497	15.837			11.99	2.7969	6.9815		
9.2926	1.7381	14.825			4.0366	1.6727	6.9033		
4.7316	2.4223				1.5778	2.7126			
0.37452	4.5806				1.5285	2.028			
0.5297	2.682				1.4433	2.5281			
1.002	4.417				1.2946	3.2954			
0.90474					1.736				
0.48233					1.5293				
0.17673					0.70708				
0.12437					0.34466				
0.064395					0.097514				
0.11453					0.14083				
0.05229					0.14694				
0.052638					0.12438				
3.338921	4.585963	14.48698	18.237	18.9915	2.565519	2.6142	13.10945	20.828	19.607

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
6.2641	5.1625	8.7638	12.729	11.173	5.6077	6.8934	6.2549	18.814	7.0751
10.208	1.5472	5.952	8.7638	14.44	4.5648	3.887	3.2422	6.2549	20.147
11.869	1.5438	4.635			7.0029	1.2051	4.4963		
3.151	0.99111	5.0598			4.3873	1.6765	4.8158		
1.3261	2.7365				2.3082	1.6526			
1.8407	2.819				0.66001	2.6237			
1.617	3.2756				0.5731	3.268			
1.4111	3.9857				0.89561	3.6697			
2.6046					1.5196				
2.034					0.86028				
0.53166					0.24463				
0.29151					0.14351				
0.10181					0.050518				
0.13115					0.16524				
0.11938					0.10048				
0.098823					0.066787				
2.724996	2.757676	6.10265	10.7464	12.8065	1.821917	3.1095	4.7023	12.53445	13.61105

Case (23)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
33.372	1.9519	1.8849	1.3296	2.9046	9.7068	1.3719	2.9206	7.0178	7.5501
6.1777	2.7483	1.9007	1.8849	4.3032	3.7229	1.1049	1.8767	2.9206	7.669
3.4915	5.3267	1.8017			1.9506	3.1565	3.3117		
2.0262	5.5134	3.3019			1.4733	2.0911	2.6536		
0.91761	3.3728				1.4045	3.4404			
0.33915	8.8739				0.66283	11.573			
1.217	18.057				0.8419	14.77			
2.1219	67.706				0.45561	17.395			
0.91224					0.63663				
1.1069					0.37942				
0.12307					0.22004				
0.13072					0.21407				
0.05093					0.4866				
0.046531					0.43992				
0.088283					0.063603				
0.10222					0.053075				
3.263997	14.19375	2.2223	1.60725	3.6039	1.419487	6.86285	2.69065	4.9692	7.60955

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
11.044	1.7526	1.5215	3.4912	7.1354	21.399	1.0435	0.63144	0.71773	4.2758
6.1906	1.9973	0.7719	1.5215	6.9617	6.9127	1.1287	1.0601	0.63144	3.8229
3.2185	6.3639	2.3819			2.3298	2.4176	1.7014		
1.026	3.7712	2.3043			1.0621	1.118	1.4271		
1.4575	4.3492				0.88159	2.3893			
0.7501	12.506				0.25397	10.461			
1.1178	12.13				1.0678	9.1068			
1.2797	18.901				2.4705	32.453			
0.87546					1.1639				
0.36995					1.1034				
0.027888					0.10097				
0.048039					0.092496				
0.1811					0.090167				
0.20405					0.051652				
0.075093					0.12145				
0.02252					0.050319				
1.743019	7.7214	1.7449	2.50635	7.04855	2.446988	7.514738	1.20501	0.674585	4.04935

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
38.545	1.8629	1.8434	0.17625	0.49298	7.6511	0.9532	2.7517	2.9411	1.4154
6.1471	1.891	2.7551	1.8434	0.93058	5.9453	1.4876	3.5791	2.77517	4.4724
2.5748	4.2057	0.83297			4.3165	7.8604	2.2172		
0.62567	2.4583	1.0838			1.8451	7.9193	0.89588		
0.98817	3.9725				1.4805	8.6029			
1.7439	5.9565				1.1097	7.5446			
1.6012	11.433				0.49772	7.5065			
2.0421	59.42				1.2729	13.807			
1.6243					1.1214				
1.9316					0.96281				
0.070149					0.088423				
0.012721					0.13041				
0.11738					0.048173				
0.089451					0.042468				
0.072606					0.017757				
0.078895					0.031617				
3.641565	11.39999	1.628818	1.009825	0.71178	1.660117	6.960188	2.36097	2.858135	2.9439

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
13.217	1.6525	1.1813	1.6752	1.54	20.551	1.4116	1.4741	0.22444	0.87429
5.0378	1.823	3.4091	1.1813	2.952	4.2615	1.166	3	1.4741	0.73378
2.9811	8.8632	2.5751			1.5803	5.1914	1.5369		
0.9244	5.7305	1.4789			0.047508	3.5979	0.54663		
1.57	4.2669				0.73598	3.8725			
1.5761	5.5036				1.4074	6.5291			
0.85016	2.6852				1.4895	4.4841			
1.7148	13.343				2.3937	24.28			
1.1581					1.3039				
0.74392					1.4252				
0.023298					0.1262				
0.035352					0.050262				
0.094119					0.17101				
0.11008					0.066029				
0.12475					0.10905				
0.10354					0.077912				
1.891532	5.483488	2.1611	1.42825	2.246	2.237278	6.316575	1.639408	0.84927	0.804035

Case (24)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
5.9065	1.5611	6.8527	3.6737	1.9408	4.546	2.3486	6.9344	8.3079	4.8824
2.8628	2.1636	2.3882	6.8527	7.9267	4.6368	2.6901	2.6526	6.9344	12.688
0.73057	1.9371	2.0034			2.1089	0.95581	4.4275		
0.62475	1.4052	1.6213			1.1221	2.7966	2.9781		
2.6898	3.0301				1.6003	6.5431			
0.21927	3.5234				0.65779	7.3733			
0.23031	7.1601				0.33558	5.483			
0.23247	4.6137				0.67798	1.7846			
0.38623					0.41127				
0.34313					0.22693				
0.22005					0.52073				
0.33031					0.30857				
0.26781					0.33582				
0.1791					0.21247				
0.2045					0.17572				
0.14603					0.14063				
0.973352	3.174288	3.2164	5.2632	4.93375	1.126099	3.746889	4.24815	7.62115	8.7852

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
5.3217	2.7797	6.4584	9.9279	4.3321	5.1177	2.2407	5.6332	6.3786	2.7498
4.4065	2.4969	2.7161	6.4584	16.404	3.659	2.6549	2.5701	5.6332	11.943
1.981	1.6246	4.008			0.81375	1.4788	3.0757		
0.79931	6.0126	4.601			0.85864	3.5034	2.5019		
2.4228	13.295				2.3214	8.272			
0.7463	13.03				0.57421	6.8144			
0.50762	6.6276				0.26066	4.0467			
0.70312	2.0121				0.34687	1.8032			
0.68852					0.56617				
0.33025					0.3751				
0.46358					0.40866				
0.44105					0.44624				
0.35015					0.38301				
0.2327					0.22941				
0.26611					0.27123				
0.2801					0.19853				
1.246301	5.984813	4.445875	8.19315	10.36805	1.051911	3.851763	3.445225	6.0059	7.3464

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.6636	3.549	19.307	48.892	11.034	3.8057	1.8612	5.8084	4.4058	1.3736
1.2009	1.993	15.589	19.307	64.176	1.0814	1.3537	3.2331	5.8084	3.155
1.4777	1.2815	6.5289			1.0873	1.5579	1.585		
1.0951	1.0176	10.457			0.80245	5.4799	3.4844		
1.0065	2.8724				1.0553	9.677			
0.13087	2.1863				0.72852	5.5868			
0.12163	3.5716				0.51428	1.6826			
0.094901	2.1681				0.15161	2.6457			
0.091983					0.16499				
0.18342					0.15549				
0.17975					0.42072				
0.16649					0.38584				
0.063985					0.17558				
0.068146					0.13769				
0.09153					0.13087				
0.11844					0.11857				
0.547184	2.329938	12.97048	34.0995	37.605	0.682269	3.7306	3.527725	5.1071	2.2643

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
6.061	3.2874	22.662	76.405	13.742	4.1735	4.0086	23.115	72.943	12.372
1.7419	1.1678	15.775	22.662	86.917	1.5668	1.5269	19.938	23.115	76.136
1.5059	1.8446	10.228			1.0239	1.2307	8.8819		
1.0364	8.1884	6.006			1.0979	3.7863	6.4445		
0.96098	25.04				1.0152	12.347			
0.57208	13.815				0.2749	5.3103			
0.26608	2.4335				0.11086	1.3877			
0.17561	3.3926				0.17727	1.4641			
0.27216					0.29878				
0.25039					0.24322				
0.3327					0.2553				
0.25046					0.22664				
0.1095					0.10055				
0.077441					0.057114				
0.082947					0.10581				
0.097068					0.14089				
0.862039	7.396163	13.66775	49.5335	50.3295	0.67929	3.8827	14.59485	48.029	44.254

Case (25)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.2611	3.0349	1.0581	1.9612	0.62567	2.8547	5.7192	5.8084	4.4058	1.3736
1.3143	4.2353	0.23531	1.0581	1.2106	1.2814	6.1516	3.2331	5.8084	3.155
0.95439	3.8264	0.38158			0.86665	8.5273	1.585		
0.36768	2.3566	1.1094			0.83352	10.871	3.4844		
0.1807	1.8619				0.33349	4.9051			
0.15449	5.642				0.4553	4.2613			
0.31609	4.6134				0.16577	3.5335			
0.13668	3.1486				0.17594	5.0255			
0.33515					0.37959				
0.29584					0.44645				
0.14607					0.14043				
0.057939					0.28701				
0.041953					0.21158				
0.046247					0.065127				
0.074516					0.059194				
0.086639					0.089524				
0.360612	3.589888	0.696098	1.50965	0.918135	0.540355	6.124313	3.527725	5.1071	2.2643

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.1271	4.8448	2.0405	3.1035	0.43545	1.0217	5.0922	1.2934	2.5112	0.52246
0.61944	5.2588	0.88864	2.0405	1.4283	1.0998	5.4509	0.32324	1.2934	1.1992
0.42295	8.7757	0.84012			0.75789	5.576	0.62133		
0.40084	13.456	2.0324			0.43542	7.0333	1.9338		
0.050369	7.2475				0.14495	4.7711			
0.45543	5.9986				0.19293	6.5432			
0.20828	3.7899				0.27526	3.3876			
0.10255	4.1334				0.16502	2.1653			
0.23903					0.28232				
0.22411					0.35566				
0.16561					0.1291				
0.20658					0.073164				
0.15564					0.075884				
0.040289					0.036305				
0.08317					0.093431				
0.073306					0.097562				
0.348418	6.688088	1.450415	2.572	0.931875	0.327275	5.00245	1.042943	1.9023	0.86083

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.8082	3.4443	0.90233	1.1709	0.69692	3.3196	5.1982	3.6605	4.1666	0.52434
1.8659	5.386	0.58745	0.90233	1.5927	0.79978	7.0476	2.9385	3.6605	1.569
0.35176	2.3915	1.9658			0.50852	12.039	1.7435		
0.28934	1.3502	1.8928			0.58611	20.39	3.3302		
0.60107	3.0983				0.28695	12.49			
0.15051	11.624				0.45135	11.598			
0.042028	7.6946				0.25385	5.0662			
0.35607	7.3165				0.51345	5.6838			
0.61753					0.6167				
0.13829					0.28185				
0.12113					0.15283				
0.1081					0.13459				
0.12571					0.12206				
0.11417					0.15916				
0.13421					0.14758				
0.12093					0.049763				
0.559059	5.288175	1.337095	1.036615	1.14481	0.524009	9.9391	2.918175	3.91355	1.04667

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.0466	6.0919	1.1246	1.6024	0.33824	3.2173	4.5262	0.86897	1.4312	0.52994
1.2291	6.1668	0.95841	1.1246	0.80358	2.5031	5.2344	0.7082	0.86897	0.96781
0.7258	7.4122	1.456			0.80042	2.8976	1.1843		
0.49306	16.693	3.1838			0.40225	5.9156	1.8828		
0.42699	11.242				0.63356	5.4031			
0.38494	15.078				0.38038	12.106			
0.20063	6.158				0.049999	5.7335			
0.44921	3.8538				0.30441	4.7802			
0.35407					0.42543				
0.19051					0.14109				
0.054558					0.059766				
0.057165					0.080484				
0.041667					0.058868				
0.14509					0.12794				
0.14247					0.14929				
0.078356					0.12996				
0.438764	9.086963	1.680703	1.3635	0.57091	0.591515	5.824575	1.161068	1.150085	0.748875

Case (26)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
11.549	6.3985	21.068	11.346	1.724	4.1465	5.3714	35.815	18.795	2.9106
3.9224	6.3217	22.17	21.068	4.8183	2.2512	4.0201	28.589	35.815	7.9971
4.8847	3.2911	6.8875			1.7907	2.3825	5.1268		
3.0601	9.7134	5.4546			2.097	8.8121	4.2451		
1.1505	10.842				1.2412	7.9149			
0.621464	14.65				0.39257	7.0097			
0.34381	16.223				0.43199	6.0721			
0.28278	28.369				0.18477	6.667			
0.29197					0.1827				
0.11754					0.16983				
0.095302					0.16681				
0.046291					0.086145				
0.05272					0.039983				
0.10726					0.058733				
0.15268					0.066814				
0.080937					0.07952				
1.672466	11.97609	13.89503	16.207	3.27115	0.836654	6.031225	18.44398	27.305	5.45385

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.1189	3.6877	38.682	15.494	2.6951	3.7605	6.7118	25.763	9.2304	2.071
1.1004	4.9136	30.544	38.682	5.7851	1.5914	6.207	22.745	25.763	2.8592
2.3166	2.5609	6.1899			4.4149	2.7136	5.5429		
1.2118	9.2639	2.6694			2.5966	5.4525	3.4259		
1.9215	8.6359				0.7441	5.7683			
0.26331	5.6011				0.39384	5.3451			
0.22117	4.3031				0.27512	6.8133			
0.19501	3.8588				0.24572	7.6499			
0.18465					0.33293				
0.091319					0.222				
0.14515					0.055707				
0.026879					0.026484				
0.043609					0.063736				
0.039117					0.084636				
0.08091					0.12286				
0.08907					0.058906				
0.690587	5.353125	19.52133	27.088	4.2401	0.93684	5.832688	14.3692	17.4967	2.4651

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
11.827	9.225	26.149	13.274	2.7901	8.2217	18.912	215.18	42.234	5.611
7.281	7.3922	83.69	62.274	5.0717	3.9789	18.848	267.41	215.18	15.472
6.8762	5.6595	7.4446			4.0547	10.119	32.51		
4.6364	13.543	10.989			4.4758	15.27	16.763		
0.85624	12.894				1.5861	14.145			
0.59082	19.312				0.38251	12.341			
0.33407	14.368				0.67617	11.787			
0.21816	16.787				0.32028	12.81			
0.34237					0.18466				
0.30494					0.24495				
0.24047					0.1351				
0.11645					0.068699				
0.076283					0.026282				
0.055353					0.041072				
0.11945					0.10002				
0.096447					0.08012				
2.123228	12.39759	32.06815	37.774	3.9309	1.536066	14.279	132.9658	128.707	10.5415

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
155.31	29.34	242.18	51.809	4.5247	9.2606	13.795	175.13	28.767	3.5576
42.323	30.734	291.11	242.18	12.427	6.2913	12857	221.51	175.13	8.7607
53.227	8.9253	36.856			7.0569	6.5843	24.941		
44.328	73.098	20.483			7.4466	17.08	15.892		
14.399	37.804				1.5617	15.104			
3.6624	18.838				0.51441	19.979			
2.4451	44.148				0.40107	15.312			
3.4222	213.54				0.19352	6.4215			
2.6768					0.4128				
3.4181					0.52905				
0.31452					0.19762				
0.18781					0.12329				
0.41225					0.095871				
0.6382					0.029097				
0.46612					0.024114				
0.17419					0.042086				
20.46279	57.05341	147.6573	146.9945	8.47585	2.136252	1618.909	109.3683	101.9485	6.15915

Case (27)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.2588	0.79613	2.4439	1.9746	5.0019	0.63633	0.46111	1.9397	14.154	32.429
0.2354	1.6399	1.6546	2.4439	5.7586	1.7271	0.85091	2.7936	1.9397	34.974
0.4792	0.83003	0.94943			2.2864	0.72297	3.3195		
1.0747	0.44403	1.2315			0.76089	0.84432	1.5795		
0.57764	0.37518				0.091347	1.0523			
0.47812	0.29722				0.92696	1.5659			
0.378	1.1509				0.68884	1.2366			
0.42859	1.5334				0.043541	0.84571			
0.24548					0.18212				
0.10865					0.13862				
0.37846					0.24314				
0.28025					0.35985				
0.083521					0.26073				
0.15782					0.14039				
0.57706					0.18676				
0.38506					0.095908				
0.382922	0.883349	1.569858	2.20925	5.38025	0.548058	0.947478	2.408075	8.04685	33.7015

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.32576	0.91464	2.9132	4.7914	11.923	0.34072	1.5409	2.8082	3.1446	4.983
1.2812	1.1821	1.6503	2.9132	9.1887	0.87798	2.1407	1.2636	2.8082	5.0672
2.3136	0.72786	1.2448			0.98783	1.3425	0.657		
0.78784	1.3101	0.92152			0.4525	0.75521	1.3552		
0.45686	1.5691				1.6072	1.0219			
0.60671	1.3879				0.60102	0.92095			
0.66408	1.5578				0.57296	1.5969			
0.11253	1.4389				0.19583	1.3825			
0.26959					0.21618				
0.13042					0.24376				
0.18832					0.49071				
0.31574					0.39466				
0.21971					0.10383				
0.1666					0.2387				
0.40775					0.66432				
0.33835					0.40789				
0.536566	1.26105	1.682455	3.8523	10.55585	0.524756	1.337695	1.521	2.9764	5.0251

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.94123	1.5406	3.3879	6.517	10.384	1.1242	0.45005	5.2002	11.954	25.059
0.62741	1.8282	5.0855	3.3879	9.6524	1.3294	0.65883	2.7963	5.2002	26.395
0.66094	2.3922	0.80072			1.7468	2.2326	3.129		
2.3522	1.1308	3.3819			0.46967	1.2659	1.9274		
0.63822	1.1428				0.28079	1.6501			
0.34729	0.91586				0.59438	1.5483			
0.45353	1.262				0.23325	1.3271			
0.54589	1.0554				0.24934	1.0947			
0.18893					0.44149				
0.049632					0.096223				
0.68604					0.077665				
0.15954					0.12747				
0.1603					0.15904				
0.081513					0.10843				
0.10245					0.14455				
0.31751					0.20347				
0.519539	1.408483	3.164005	4.95245	10.0182	0.461636	1.278448	3.263225	8.5771	25.727

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.2791	0.83354	3.3484	9.472	13.827	1.2895	1.886	2.6326	7.212	10.984
1.4221	1.5088	2.4106	3.3482	11.914	1.4159	2.9325	1.4392	2.6326	10.512
1.3076	3.8275	1.0255			0.86685	3.3842	0.84936		
0.53899	1.0743	1.3021			2.1502	0.42422	2.4958		
0.36779	2.0482				0.6513	1.996			
0.59075	2.3217				0.34865	1.5694			
0.49923	1.9847				0.81256	1.8681			
0.58435	0.9936				0.92426	0.79316			
0.53426					0.37974				
0.14509					0.084916				
0.13178					0.12492				
0.24444					0.22524				
0.16136					0.10634				
0.18772					0.17113				
0.35336					0.34575				
0.35429					0.35177				
0.543888	1.824043	2.02165	6.4101	12.8705	0.640564	1.856698	1.85424	4.9223	10.748

Case (28)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.42347	0.56613	1.9226	1.76	0.37253	0.07147	0.50932	0.8472	5.6973	5.3349
0.18688	1.0375	1.367	1.9226	1.1474	0.1954	0.40828	0.9401	0.8472	12.143
0.028824	0.86809	3.122			0.38046	0.4889	2.1227		
0.041877	0.2489	0.56916			0.43635	0.9257	1.3254		
0.056597	0.25946				0.3392	0.75939			
0.36136	0.4425				0.44204	0.84679			
0.15516	0.35801				0.030775	0.69504			
0.26994	0.35498				0.27855	0.076609			
0.30362					0.61763				
0.084015					0.25662				
0.077831					0.091476				
0.011632					0.042766				
0.072799					0.077883				
0.11234					0.063652				
0.066685					0.12708				
0.025033					0.028121				
0.142379	0.516946	1.74519	1.8413	0.759965	0.217467	0.588754	1.30885	3.27225	8.73895

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.21999	0.47231	0.39176	0.74849	0.95403	0.14643	0.5533	0.47949	0.43844	0.55694
0.14187	0.6442	0.14995	0.39176	1.4918	0.18614	0.59796	0.33649	0.47949	1.573
0.16558	0.38037	0.6891			0.10974	0.21001	0.33391		
0.26054	0.10311	0.11102			0.20785	0.038458	0.088211		
0.12075	0.23459				0.050959	0.23563			
0.54479	0.46774				0.44131	0.43258			
0.13147	0.34361				0.16371	0.34009			
0.20241	0.25491				0.20902	0.14417			
0.39539					0.391				
0.11292					0.11157				
0.13039					0.10032				
0.033272					0.02439				
0.083779					0.080088				
0.080836					0.099033				
0.11603					0.091953				
0.026906					0.041192				
0.172933	0.362605	0.335458	0.570125	1.222915	0.153419	0.319025	0.309525	0.458965	1.06497

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.12389	0.72977	0.10051	1.2591	0.96984	1.0253	1.0785	31.636	56.97	23.357
0.04619	1.2142	0.71558	0.10051	0.59749	0.25582	1.3722	13.756	31.636	29.316
0.18976	0.54447	1.0006			0.026907	1.2236	10.638		
0.18426	0.23892	0.20898			0.23085	1.582	4.6722		
0.18916	0.16614				0.65311	0.46998			
0.045576	0.040503				0.22556	0.023349			
0.013945	0.16575				0.058476	0.46731			
0.007458	0.077659				0.030496	0.39784			
0.10064					0.13906				
0.069215					0.14125				
0.080406					0.11669				
0.074116					0.22466				
0.039449					0.075551				
0.031638					0.03189				
0.007737					0.004397				
0.047322					0.05118				
0.078173	0.397177	0.506418	0.679805	0.783665	0.2057	0.826847	15.17555	44.303	26.3365

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.42898	2.2324	1.5953	5.3817	3.4357	0.21645	0.41351	0.59166	0.51302	2.232
0.12193	2.3106	2.2609	1.5953	6.0521	0.035479	0.87629	1.2539	0.59166	0.24651
0.048637	0.5722	1.0669			0.076538	0.34446	1.1891		
0.14842	0.6213	1.087			0.1077	0.35143	0.089379		
0.12974	0.773				0.14328	0.43425			
0.024949	0.18769				0.032196	0.040999			
0.027391	0.18065				0.009851	0.21542			
0.018873	0.3937				0.016125	0.10016			
0.11948					0.12874				
0.090311					0.0604				
0.024846					0.047545				
0.071569					0.071431				
0.012726					0.03688				
0.034748					0.018182				
0.03115					0.010351				
0.091292					0.067647				
0.089065	0.908943	1.502525	3.4885	4.7439	0.067425	0.347065	0.78101	0.55234	1.239255

Case (29)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.4753	1.2772	2.8059	2.0803	1.4153	1.8075	3.9998	5.5217	11.218	1.2905
2.1277	1.44	1.0467	2.8059	4.7293	2.2561	1.3955	2.403	5.5217	8.015
6.91	1.3132	1.6898			10.494	1.4094	0.54266		
18.136	1.6119	2.1499			34.798	2.7565	2.735		
9.1021	2.8098				28.452	4.3193			
0.19182	4.3021				0.31419	2.4567			
0.52233	3.5557				0.39878	2.1591			
0.5814	1.8952				0.339385	2.624			
0.22318					0.33226				
0.3768					0.10413				
0.14336					0.32537				
0.19068					0.26904				
0.17051					0.26904				
0.11954					0.27926				
0.18474					0.21006				
0.18422					0.38445				
					0.115				
2.53998	2.275638	1.923075	2.4431	3.0723	4.773445	2.640038	2.80059	8.36985	4.65275

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.1342	3.9946	2.4082	6.1332	1.997	2.1984	3.1127	1.0485	3.5208	1.2368
3.4155	1.7445	1.9913	2.4082	6.1765	2.9412	1.5773	1.754	1.0485	4.2511
11.429	1.4399	1.371			9.2104	1.7456	1.5576		
41.392	3.9164	2.9106			34.662	3.1065	2.1544		
32.297	5.1672				22.953	4.5329			
0.31544	2.1451				0.25994	2.6928			
0.51539	2.8151				0.60512	2.8886			
0.59038	2.6493				0.56833	2.1272			
0.28426					0.30293				
0.18985					0.22964				
0.76745					0.35238				
0.48533					0.27154				
0.42712					0.24217				
0.3157					0.18319				
0.37368					0.213				
0.18563					0.1617				
5.944871	2.984013	2.170275	4.2707	4.08675	4.709684	2.72295	1.628625	2.28465	2.74395

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.8878	0.9867	4.5878	1.582	1.3382	2.0451	1.466	2.0951	2.3975	1.2366
2.6911	0.79185	2.0245	4.5878	4.6034	3.4539	0.26795	1.877	2.951	2.5405
10.226	1.1441	1.7974			6.6465	1.1688	1.3052		
30.952	1.2512	1.7314			29.565	1.6955	3.458		
15.591	1.5277				18.056	1.603			
0.30931	2.9275				0.59022	1.0667			
0.38844	1.9411				0.84305	1.8107			
0.45426	1.8066				2.0436	1.5232			
0.22044					1.8759				
0.22921					0.69628				
0.13161					0.60232				
0.21972					0.85604				
0.17856					0.80616				
0.13876					0.39329				
0.10812					0.56851				
0.1905					0.47235				
3.994802	1.547094	2.535275	3.0849	2.9708	4.344639	1.325231	2.183825	2.67425	1.88855

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.5378	1.851	2.6501	2.2268	0.6596	2.157	1.4103	4.0362	1.6939	0.93093
4.4717	0.4542	1.6517	2.6501	0.8559	3.9625	0.72191	2.1401	4.0362	3.6001
10.657	1.0407	2.1989			11.197	1.2024	1.8609		
36.433	1.8981	3.4807			34.2	1.6222	1.9191		
20.836	2.4067				19.288	2.1702			
0.52412	1.6325				0.30759	1.6881			
0.70668	1.9457				0.39917	1.2856			
1.3873	1.5827				0.69324	1.4897			
0.50425					0.30307				
0.304					0.20536				
0.22322					0.084884				
0.56883					0.33855				
0.50308					0.28534				
0.25472					0.16723				
0.25133					0.13897				
0.29796					0.18311				
5.028812	1.60145	2.49535	2.43845	0.75775	4.619438	1.448801	2.489075	2.86505	2.265515

Case (30)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.8273	1.1362	1.5472	4.6569	2.9773	1.3946	5.1188	42.163	78.186	43.521
1.5746	0.87845	2.3222	1.5472	7.4346	1.9115	3.9841	27.652	42.163	108.91
5.3049	1.0885	2.2468			3.4997	3.2277	20.008		
7.9569	0.71046	1.4101			4.6148	1.2541	9.4389		
1.5571	0.85967				3.2172	3.3258			
0.16619	0.58564				0.54116	1.7947			
0.15553	0.25895				0.32239	1.1468			
0.06198	1.4885				0.12343	1.0353			
0.22576					0.29073				
0.42212					0.39123				
0.06316					0.038806				
0.051462					0.10606				
0.1023					0.23672				
0.060001					0.11911				
0.062127					0.076572				
0.054558					0.083527				
1.227874	0.875796	1.881575	3.10205	5.20595	1.060471	2.610913	24.81548	60.1745	76.2155

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.526	1.1204	8.4201	18.403	9.0456	1.2422	1.15	2.2182	6.5764	2.2429
2.0012	1.3979	5.7143	8.4201	27.51	1.6923	0.69257	1.6291	2.2182	8.3607
3.4111	1.2529	4.76666			6.5273	0.53817	2.1227		
3.5503	0.41258	2.0834			5.8236	0.26831	1.3097		
2.6007	0.70623				1.0289	0.44659			
0.52749	1.0165				0.16859	0.70681			
0.45773	0.76162				0.16608	0.39348			
0.15953	1.0182				0.073028	0.92469			
0.23364					0.12785				
0.35897					0.30922				
0.048998					0.065004				
0.12508					0.069806				
0.26896					0.13397				
0.088166					0.050065				
0.046959					0.048234				
0.09362					0.075056				
0.968653	0.960791	5.246115	13.41155	18.2778	1.100075	0.640078	1.819925	4.3973	5.3018

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.214	1.2669	3.9481	4.5148	9.6683	1.1459	7.3005	40.18	74.93	61.876
1.5668	1.5404	2.0565	3.9481	9.1332	1.3599	4.3506	32.631	40.18	128.8
4.4435	1.1948	0.5998			3.387	3.1035	22.608		
4.3095	0.67821	0.91521			5.4854	2.1068	10.438		
0.97613	0.70748				5.6396	4.8064			
0.24681	0.75069				0.16945	2.6987			
0.15881	1.2167				0.20083	1.1313			
0.20803	2.0599				0.28434	0.48796			
0.18297					0.61034				
0.34464					0.31774				
0.067764					0.060817				
0.087613					0.13562				
0.075772					0.17387				
0.055666					0.2344				
0.099036					0.15164				
0.14718					0.13765				
0.949014	1.176885	1.879903	4.23145	9.40075	1.218406	3.24822	26.46425	57.555	95.338

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.7456	3.3947	8.8956	23.84	25.832	2.6266	1.1434	3.8023	7.9008	8.6973
1.9557	2.5014	8.3494	8.8956	30.845	1.2626	0.80214	1.4989	3.8023	17.409
4.3201	2.5818	4.42			4.4008	0.79084	1.0022		
5.1952	0.87057	3.4698			3.2275	0.63655	1.1375		
4.9952	2.1648				0.63833	0.93288			
0.4175	1.8123				0.16175	0.80172			
0.1721	0.91582				0.12125	0.70043			
0.19048	1.0655				0.27268	2.5648			
0.41935					0.29784				
0.31153					0.34642				
0.043783					0.067054				
0.15022					0.10246				
0.1956					0.11546				
0.23091					0.1386				
0.27614					0.14745				
0.51715					0.22352				
1.321035	1.913361	6.2837	16.3678	28.3385	0.884395	1.046595	1.860225	5.85155	13.05315

Case (31)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.8273	1.1362	1.5472	4.6569	2.9773	1.3946	5.1188	42.163	78.186	43.521
1.5746	0.87845	2.3222	1.5472	7.4346	1.9115	3.9841	27.652	42.163	108.91
5.3049	1.0885	2.2468			3.4997	3.2277	20.008		
7.9569	0.71046	1.4101			4.6148	1.2541	9.4389		
1.5571	0.85967				3.2172	3.3258			
0.16619	0.58564				0.54116	1.7947			
0.15553	0.25895				0.32239	1.1468			
0.06198	1.4885				0.12343	1.0353			
0.22576					0.29073				
0.42212					0.39123				
0.06316					0.038806				
0.051462					0.10606				
0.1023					0.23672				
0.060001					0.11911				
0.062127					0.076572				
0.054558					0.083527				
1.227874	0.875796	1.881575	3.10205	5.20595	1.060471	2.610913	24.81548	60.1745	76.2155

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.526	1.1204	8.4201	18.403	9.0456	1.2422	1.15	2.2182	6.5764	2.2429
2.0012	1.3979	5.7143	8.4201	27.51	1.6923	0.69257	1.6291	2.2182	8.3607
3.4111	1.2529	4.76666			6.5273	0.53817	2.1227		
3.5503	0.41258	2.0834			5.8236	0.26831	1.3097		
2.6007	0.70623				1.0289	0.44659			
0.52749	1.0165				0.16859	0.70681			
0.45773	0.76162				0.16608	0.39348			
0.15953	1.0182				0.073028	0.92469			
0.23364					0.12785				
0.35897					0.30922				
0.048998					0.065004				
0.12508					0.069806				
0.26896					0.13397				
0.088166					0.050065				
0.046959					0.048234				
0.09362					0.075056				
0.968653	0.960791	5.246115	13.41155	18.2778	1.100075	0.640078	1.819925	4.3973	5.3018

					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.214	1.2669	3.9481	4.5148	9.6683	1.1459	7.3005	40.18	74.93	61.876
1.5668	1.5404	2.0565	3.9481	9.1332	1.3599	4.3506	32.631	40.18	128.8
4.4435	1.1948	0.5998			3.387	3.1035	22.608		
4.3095	0.67821	0.91521			5.4854	2.1068	10.438		
0.97613	0.70748				5.6396	4.8064			
0.24681	0.75069				0.16945	2.6987			
0.15881	1.2167				0.20083	1.1313			
0.20803	2.0599				0.28434	0.48796			
0.18297					0.61034				
0.34464					0.31774				
0.067764					0.060817				
0.087613					0.13562				
0.075772					0.17387				
0.055666					0.2344				
0.099036					0.15164				
0.14718					0.13765				
0.949014	1.176885	1.879903	4.23145	9.40075	1.218406	3.24822	26.46425	57.555	95.338

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.7456	3.3947	8.8956	23.84	25.832	2.6266	1.1434	3.8023	7.9008	8.6973
1.9557	2.5014	8.3494	8.8956	30.845	1.2626	0.80214	1.4989	3.8023	17.409
4.3201	2.5818	4.42			4.4008	0.79084	1.0022		
5.1952	0.87057	3.4698			3.2275	0.63655	1.1375		
4.9952	2.1648				0.63833	0.93288			
0.4175	1.8123				0.16175	0.80172			
0.1721	0.91582				0.12125	0.70043			
0.19048	1.0655				0.27268	2.5648			
0.41935					0.29784				
0.31153					0.34642				
0.043783					0.067054				
0.15022					0.10246				
0.1956					0.11546				
0.23091					0.1386				
0.27614					0.14745				
0.51715					0.22352				
1.321035	1.913361	6.2837	16.3678	28.3385	0.884395	1.046595	1.860225	5.85155	13.05315

Case (32)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
13.916	3.5321	17.792	13.3	2.9354	2.3545	5.8385	6.0098	8.2151	2.4544
8.8686	4.6816	19.265	17.792	9.6193	4.4439	3.4758	4.5933	6.0098	7.2573
3.1798	3.8054	10.416			4.4085	4.9897	2.9877		
7.9497	2.9301	3.5907			1.5466	1.5389	8.1907		
4.5264	5.5385				1.0039	1.7064			
0.65221	3.8375				0.46876	4.3822			
0.5321	11.32				0.2987	6.4586			
0.94253	16.196				0.2659	3.6396			
0.32642					0.33647				
0.28512					0.63486				
0.11464					0.19553				
0.22698					0.13158				
0.12219					0.13432				
0.066733					0.15996				
0.080771					0.23883				
0.074083					0.24249				
2.616517	6.48015	12.76593	15.546	6.27735	1.05405	4.003713	5.445375	7.11245	4.85585

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.1511	4.4192	2.4598	3.0562	1.5859	7.2805	2.776	9.4521	10.911	1.9016
2.8689	3.0567	2.0851	2.4598	3.5737	4.9758	2.0005	9.9922	9.4521	7.3417
2.1942	3.7308	3.8014			2.0295	2.417	7.8186		
2.4656	1.8411	7.3317			5.6068	2.2907	4.0453		
2.1828	3.1437				3.1649	4.9916			
0.40529	1.8301				0.50968	2.982			
0.23164	4.7789				0.19475	6.2434			
0.24724	5.5304				0.32735	10.985			
0.14365					0.2063				
0.33112					0.1486				
0.091803					0.058121				
0.10163					0.11272				
0.087646					0.099157				
0.060675					0.078905				
0.10981					0.092838				
0.12765					0.042656				
0.925047	3.541363	3.9195	2.758	2.5798	1.558036	4.335775	7.82705	10.18155	4.62165

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
15.117	5.2134	20.299	13.025	4.7049	3.6661	5.1798	6.1732	10.603	2.4545
8.9451	2.5361	24.123	20.299	11.913	3.3298	2.6431	3.1632	6.1732	9.1185
5.0816	3.3461	18.197			10.17	2.6312	5.1846		
13.223	3.7749	7.0682			7.4411	2.0905	9.5424		
10.195	5.2671				1.517	4.0915			
1.4247	7.5721				0.83044	3.509			
1.1627	16.672				0.91666	6.6883			
1.2626	19.324				0.94359	6.7557			
0.71136					0.21302				
0.39499					0.35233				
0.37654					0.44819				
0.34947					0.38066				
0.34131					0.71453				
0.2117					0.55767				
0.3538					0.48451				
0.27097					0.35519				
3.713865	7.963213	17.4218	16.662	8.30895	2.020049	4.198638	6.01585	8.3881	5.7865

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
7.297	2.413	5.609	12.396	6.8666	5.2407	2.8261	13.829	10.1	3.4679
2.978	1.8781	5.5018	5.609	22.142	3.8153	1.1758	10.6	13.829	10.654
6.3129	0.98357	7.4894			4.7318	1.9911	11.783		
8.5778	1.5448	6.5462			10.126	3.4098	7.7717		
3.3604	2.8999				6.3785	4.362			
0.89903	2.2223				0.82033	3.6492			
0.63419	5.3866				0.67775	7.0596			
0.56926	5.8503				0.61554	5.3184			
0.29487					0.40061				
0.44057					0.23162				
0.22307					0.29806				
0.32396					0.33738				
0.5929					0.5103				
0.49399					0.3905				
0.39126					0.39854				
0.18217					0.25036				
2.098211	2.897321	6.2866	9.0025	14.5043	2.201456	3.724	10.99593	11.9645	7.06095

Case (33)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.4304	0.82788	5.0612	6.7427	17.365	2.3669	1.8218	17.69	23.592	32.11
3.66991	0.58379	2.8797	5.0612	5.0055	3.3113	1.9665	4.8486	17.69	42.483
3.5288	0.5296	0.96132			2.1479	1.6095	2.8486		
1.6673	0.42896	0.67654			2.8437	1.2744	4.8446		
2.6516	0.62128				1.6264	1.5945			
0.14221	0.44558				0.37794	0.51346			
0.21847	0.90331				0.21449	1.4786			
0.12081	3.1949				0.13338	2.9159			
0.1575					0.20854				
0.42378					0.25008				
0.1071					0.20167				
0.099959					0.17806				
0.051948					0.31236				
0.10461					0.28433				
0.080878					0.14991				
0.04973					0.18638				
1.031563	0.941913	2.39469	5.90195	11.18525	0.924584	1.646833	7.55795	20.641	37.2965

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.0912	1.4129	7.0984	7.4869	17.494	2.6989	0.79309	7.6272	9.6213	18.956
4.6364	1.2246	4.6189	7.0984	10662	3.7648	0.78941	3.7133	7.6272	7.635
3.9529	0.90703	0.94776			3.8877	0.76475	1.3591		
2.2948	1.1886	2.2191			2.1722	0.6034	1.2458		
1.5585	0.87466				2.7448	0.72694			
0.27744	0.46014				0.17115	0.46036			
0.17308	0.76				0.20314	0.58339			
0.076019	2.905				0.098461	2.8791			
0.059162					0.067116				
0.24982					0.41205				
0.18479					0.17077				
0.12309					0.093247				
0.13442					0.08815				
0.16286					0.10928				
0.096366					0.071061				
0.15786					0.11272				
1.076794	1.216616	3.72104	7.29265	5339.747	1.054097	0.950055	3.48635	8.62425	13.2955

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.041	1.2899	5.5982	4.4005	17.475	1.6251	1.1169	26.382	28.89	72.456
2.9838	0.71231	3.6781	5.5982	8.5186	2.6142	2.2285	4.0116	26.382	72.909
4.4646	0.61908	1.2142			3.8269	1.0106	5.1186		
2.4294	0.81138	0.78699			1.4312	0.8934	4.5748		
2.7854	0.73883				1.5	1.2174			
0.22021	0.34253				0.30936	0.76911			
0.16869	0.73594				0.18958	1.8107			
0.20097	2.0452				0.15983	1.2768			
0.30029					0.17476				
0.23127					0.12597				
0.041629					0.089416				
0.058634					0.058524				
0.018129					0.065702				
0.018563					0.037256				
0.044952					0.070548				
0.027009					0.052224				
1.064659	0.911896	2.819373	4.99935	12.9968	0.770661	1.290426	10.02175	27.636	72.6825

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.6517	1.3007	6.1707	6.6653	22.535	2.55	1.1547	5.465	4.9186	16.914
4.4115	0.9479	1.7841	6.1707	18.747	3.3373	0.65356	2.4608	5.465	10.489
5.6477	0.45113	1.4815			4.8343	0.36049	1.0921		
1.7001	0.83099	1.9596			1.6122	0.67535	1.2075		
1.931	1.2515				2.1906	1.0066			
0.42904	0.67312				0.23712	0.22677			
0.2399	1.5612				0.20647	0.63544			
0.24415	1.8739				0.20848	1.5452			
0.27914					0.20124				
0.21835					0.14517				
0.10719					0.08447				
0.029883					0.043596				
0.040283					0.01381				
0.044442					0.031732				
0.037419					0.03346				
0.055806					0.027452				
1.129225	1.111305	2.848975	6.418	20.641	0.984838	0.782264	2.55635	5.1918	13.7015

Case (34)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.78471	0.60665	4.5308	11.722	26.122	0.56048	0.95666	3.1635	2.6635	2.3457
1.1532	1.3079	2.5191	4.5308	49.693	0.38651	0.89609	3.4609	3.1635	5.6181
1.9779	0.26081	0.94234			0.90798	0.93411	1.1248		
3.4739	0.73901	1.2402			3.8728	1.295	0.968		
3.9304	0.8982				5.599	0.88995			
0.24153	0.38812				0.42119	0.63708			
0.36649	0.69146				0.3333	0.78913			
0.39811	0.28959				0.14501	0.48014			
0.38579					0.17591				
0.33675					0.14567				
0.066121					0.16143				
0.08905					0.1395				
0.085861					0.053712				
0.031193					0.053938				
0.035777					0.0898				
0.045543					0.11235				
0.837645	0.647718	2.30811	8.1264	37.9075	0.822411	0.85977	2.1793	2.9135	3.9819

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.62144	0.71357	2.0732	2.4311	2.1807	0.83941	0.56265	3.6131	5.258	4.4891
0.32589	0.70027	2.1872	2.0732	4.8917	0.74567	1.5867	1.6074	3.6131	5.8351
0.3741	0.48147	0.65643			0.94199	0.7963	0.75274		
1.8269	0.54017	0.85334			2.2002	1.43	0.66598		
3.0714	0.34425				2.2896	1.5517			
0.30416	0.37612				0.56733	0.89549			
0.26951	0.45902				0.44848	0.68623			
0.16772	0.46223				0.31984	0.78382			
0.27473					0.39088				
0.22297					0.33354				
0.13145					0.19912				
0.15346					0.27891				
0.045853					0.080917				
0.054513					0.062518				
0.066927					0.086638				
0.10168					0.13736				
0.500794	0.509638	1.442543	2.25215	3.5362	0.62015	1.036611	1.659805	4.43555	5.1621

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.58544	0.63318	1.1105	6.0397	1.5165	0.16318	0.22277	1.4706	0.77895	0.84914
1.3148	1.0826	0.26114	1.1105	3.1423	0.19651	0.52113	2.4165	1.4706	0.86667
2.4583	0.78339	1.259			0.51048	0.89785	1.7492		
2.5259	0.68344	1.4778			3.7142	0.59091	0.3121		
6.4237	0.64304				3.7793	0.37149			
0.22663	0.28714				0.27867	0.39287			
0.21752	0.24696				0.22874	0.279			
0.2337	0.59003				0.18144	0.25835			
0.19075					0.17607				
0.17862					0.16419				
0.051171					0.037504				
0.044412					0.026096				
0.051054					0.042599				
0.017169					0.055274				
0.048658					0.11125				
0.05794					0.09003				
0.91411	0.618723	1.02711	3.5751	2.3294	0.644367	0.441796	1.4871	1.124775	0.857905

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
0.22652	0.26123	2.2494	1.4269	1.2051	0.40798	0.42595	2.7992	3.5595	1.1953
0.34654	0.95149	2.4918	2.2494	0.8357	0.76396	1.0239	1.6247	2.7992	1.5487
0.56491	1.0874	1.0427			1.4991	0.71516	0.61878		
2.1954	0.54564	0.42144			1.8729	0.36786	0.43967		
2.7118	0.25981				2.8093	0.34066			
0.30424	0.3349				0.28042	0.32263			
0.45308	0.22469				0.42297	0.26			
0.35587	0.37954				0.46141	0.45938			
0.16639					0.21176				
0.14042					0.17812				
0.075468					0.046342				
0.025748					0.036262				
0.03595					0.068951				
0.040652					0.027152				
0.081408					0.058432				
0.10327					0.081515				
0.489229	0.505588	1.551335	1.83815	1.0204	0.576661	0.489443	1.370588	3.17935	1.372

Case (35)

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
6.61	0.8051	6.774	5.912	2.1453	5.1687	2.9831	9.9571	5.8327	1.5804
31.017	0.58748	3.9861	6.774	4.6427	9.8263	2.1057	3.6083	9.9571	3.0736
19.313	0.97971	1.1388			3.5982	2.571	3.1506		
7.7799	1.3043	1.263			1.057	3.7536	1.8538		
2.277	0.85651				0.54078	3.2478			
0.56785	2.0946				0.16802	2.3275			
0.74541	2.5239				0.52339	2.4451			
0.44604	2.7301				0.20314	2.8227			
0.32311					0.58693				
0.32218					0.37308				
0.19758					0.25761				
0.24188					0.23177				
0.19123					0.21856				
0.11507					0.17598				
0.11652					0.11998				
0.079295					0.089706				
4.396442	1.485213	3.290475	6.343	3.394	1.446197	2.782063	4.64245	7.8949	2.327

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
6.6381	1.6664	8.895	4.9948	0.61088	5.7448	0.75654	7.8786	4.7852	0.86182
14.226	1.2399	5.0077	8.895	1.8206	23.035	0.92062	4.86	7.8786	2.1193
6.8739	1.9732	3.3933			14.188	1.8525	2.2711		
2.002	2.7292	1.4715			4.889	2.1572	1.1727		
0.81642	2.6517				1.925	1.7795			
0.18659	2.5502				0.36772	2.4806			
0.55547	2.2897				0.52639	2.2449			
0.23883	2.818				0.35494	2.6834			
0.59175					0.25181				
0.30439					0.28109				
0.26045					0.2339				
0.286					0.22346				
0.21155					0.21461				
0.12258					0.10689				
0.08764					0.09047				
0.064287					0.075995				
2.091622	2.239788	4.691875	6.9449	1.21574	3.281817	1.859408	4.0456	6.3319	1.49056

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
6.5419	1.6884	9.6407	4.1818	12.514	5.2043	0.98271	6.055	6.3102	16.927
24.068	2.8357	3.8741	9.6407	17.167	8.8993	1.7528	6.8906	6.055	23.694
14.084	1.2882	5.1417			4.3041	4.2005	4.9504		
3.3778	1.33564	2.4268			3.0509	3.624	2.4578		
3.6049	2.4634				1.6215	2.2165			
0.7141	2.6303				0.3666	2.5926			
0.82445	2.8233				0.63722	2.2414			
0.45635	3.6985				0.41048	2.6606			
0.33507					0.50532				
0.26359					0.53134				
0.23549					0.052188				
0.2311					0.15881				
0.11089					0.089551				
0.049274					0.067992				
0.058446					0.10124				
0.097356					0.099981				
3.440795	2.34543	5.270825	6.91125	14.8405	1.631301	2.533889	5.08845	6.1826	20.3105

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
8.8929	0.98459	6.8648	5.0465	19.922	7.2659	0.52542	8.8269	2.3198	15.365
14.211	2.4703	6.1224	6.8648	21.922	14.661	2.6707	4.8462	8.8269	23.984
7.2857	4.7775	7.1901			9.1604	3.8461	6.2543		
3.2371	3.9839	3.1651			2.9255	3.233	2.8267		
1.8384	3.4394				1.7868	3.8035			
0.24084	2.8241				0.28725	2.5849			
0.69642	2.9825				0.44734	3.1197			
0.58198	4.3582				0.43059	4.5816			
0.35811					0.2465				
0.36899					0.33363				
0.16462					0.196				
0.32188					0.29732				
0.18913					0.14923				
0.059101					0.031015				
0.062139					0.041648				
0.087768					0.078388				
2.412255	3.227561	5.8356	5.95565	20.922	2.396157	3.045615	5.688525	5.57335	19.6745

Table (1): Mean power and standard deviations of frequency bands power of 35 patients subject

**Descriptive Statistics**

Electrodes positions	Frequency bands power	Mean power in $\mu\text{v}^2$	Std. Deviation
<b>O1</b>	P <sub>Delta</sub>	7.8713	8.81033
	P <sub>Theta</sub>	10.2756	13.41350
	P <sub>Alpha</sub>	6.4897	1.00000
	P <sub>Beta</sub>	4.7727	4.19253
	P <sub>Gamma</sub>	2.5780	2.27080
<b>O2</b>	P <sub>Delta</sub>	8.7902	8.00375
	P <sub>Theta</sub>	14.5439	25.48729
	P <sub>Alpha</sub>	9.3559	15.81235
	P <sub>Beta</sub>	5.6240	5.31684
	P <sub>Gamma</sub>	2.8857	2.84579
<b>P3</b>	P <sub>Delta</sub>	8.7201	12.61357
	P <sub>Theta</sub>	12.6524	28.21500
	P <sub>Alpha</sub>	9.8205	29.83154
	P <sub>Beta</sub>	4.0960	3.14769
	P <sub>Gamma</sub>	1.8929	1.51104
<b>P4</b>	P <sub>Delta</sub>	10.4062	11.31943
	P <sub>Theta</sub>	15.2705	25.54265
	P <sub>Alpha</sub>	11.3107	23.51130
	P <sub>Beta</sub>	4.9152	4.78456
	P <sub>Gamma</sub>	2.0210	1.65280
<b>C3</b>	P <sub>Delta</sub>	9.6981	14.49000
	P <sub>Theta</sub>	19.3058	57.80517
	P <sub>Alpha</sub>	18.1917	74.75748
	P <sub>Beta</sub>	4.6913	4.40228
	P <sub>Gamma</sub>	1.7995	1.47571
<b>C4</b>	P <sub>Delta</sub>	16.6025	22.28570
	P <sub>Theta</sub>	26.1666	70.13332
	P <sub>Alpha</sub>	19.8873	56.59216
	P <sub>Beta</sub>	7.3077	10.62117
	P <sub>Gamma</sub>	2.4759	3.43599
<b>F3</b>	P <sub>Delta</sub>	18.9712	25.20199
	P <sub>Theta</sub>	26.2615	64.06089
	P <sub>Alpha</sub>	17.5503	59.18218
	P <sub>Beta</sub>	4.7430	5.42984
	P <sub>Gamma</sub>	1.5942	1.09576
<b>F4</b>	P <sub>Delta</sub>	23.6614	30.36945
	P <sub>Theta</sub>	32.5403	72.95832
	P <sub>Alpha</sub>	18.0207	37.70200
	P <sub>Beta</sub>	5.6062	5.94402
	P <sub>Gamma</sub>	1.8281	1.20080

**Normal Group:**

Case1

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.23E-05	0.000313	0.001216	0.003014	0.018621	3.84E-06	1.62E-05	3.47E-05	5.40E-05	0.000398
3.64E-05	0.000218	0.00106	0.001216	0.010834	2.45E-06	1.41E-05	2.31E-05	3.47E-05	0.000167
3.26E-05	0.000169	0.000643			1.67E-06	1.30E-05	2.19E-05		
2.83E-05	0.000127	0.000442			1.34E-06	1.12E-05	1.86E-05		
2.32E-05	0.000114				1.27E-06	1.09E-05			
3.54E-06	0.000107				1.11E-07	9.34E-06			
2.84E-06	8.05E-05				8.44E-08	7.43E-06			
2.04E-06	5.44E-05				5.78E-08	5.76E-06			
1.70E-06					4.26E-08				
1.55E-06					4.27E-08				
2.14E-07					1.30E-08				
2.47E-07					1.30E-08				
2.47E-07					1.37E-08				
2.05E-07					1.64E-08				
8.44E-08					3.28E-08				
1.17E-05	0.000148	0.00084	0.002115	0.014728	7.33E-07	1.1E-05	2.46E-05	4.44E-05	0.000282

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.08E-05	0.000105	0.00018	0.000102	0.00056	5.44E-06	1.64E-05	0.000221	9.10E-05	0.000278
2.40E-05	8.29E-05	0.000329	0.00018	0.000234	3.14E-06	1.89E-05	0.000291	0.000221	0.000127
1.60E-05	5.67E-05	0.000141			1.64E-06	1.96E-05	8.94E-05		
1.05E-05	8.15E-05	9.78E-05			1.36E-06	1.64E-05	2.66E-05		
6.28E-06	6.64E-05				1.19E-06	1.21E-05			
7.29E-07	7.60E-05				5.65E-08	8.44E-06			
8.73E-07	7.71E-05				4.22E-08	6.53E-06			
8.17E-07	5.61E-05				2.90E-08	5.00E-06			
7.55E-07					4.88E-08				
7.17E-07					4.07E-08				

1.93E-07					9.42E-09				
1.86E-07					1.84E-08				
1.50E-07					2.17E-08				
1.41E-07					2.35E-08				
8.71E-08					8.79E-09				
6.81E-06	7.52E-05	0.000187	0.000141	0.000397	8.72E-07	1.29E-05	0.000157	0.000156	0.000202

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.02E-06	4.02E-05	0.000902	0.000175	0.000545	0.006787	0.02353	0.10609	0.18281	587.14
2.11E-06	5.63E-05	0.001741	0.000902	0.000329	0.004932	0.019937	0.066898	0.10609	0.48779
1.26E-06	5.72E-05	0.000371			0.004837	0.016428	0.043368		
6.36E-07	3.74E-05	5.43E-05			0.004508	0.011457	0.032613		
3.74E-07	1.83E-05				0.003873	0.011795			
4.48E-08	1.22E-05				0.001538	0.01044			
4.21E-08	9.06E-05				0.001553	0.007167			
3.62E-08	5.89E-06				0.001514	0.007318			
4.06E-08					0.001362				
3.24E-08					0.001337				
1.12E-08					0.000736				
1.06E-08					0.000701				
1.21E-08					0.000728				
9.92E-09					0.000617				
8.68E-09					0.000632				
5.76E-07	3.98E-05	0.000767	0.000538	0.000437	0.002377	0.013509	0.062242	0.14445	293.8139

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta

3.68E-06	3.02E-05	0.00038	0.000133	0.000245	4.52E-06	1.85E-05	0.000116	5.37E-05	0.000193
2.38E-06	3.41E-05	0.000585	0.00038	0.000142	3.32E-06	1.73E-05	0.000182	0.000116	8.35E-05
1.39E-06	4.12E-05	0.000184			2.16E-06	1.58E-05	7.77E-05		
8.24E-07	2.61E-05	3.98E-05			1.06E-06	1.29E-05	2.57E-05		
4.72E-07	1.49E-05				6.27E-07	1.24E-05			
3.53E-08	9.83E-06				7.88E-08	1.08E-05			
3.92E-08	8.01E-06				6.71E-08	7.08E-06			
3.25E-08	5.88E-06				7.14E-08	5.59E-06			
3.85E-08					7.35E-08				
2.95E-08					7.09E-08				
8.80E-09					2.25E-08				
8.96E-09					1.78E-08				
9.20E-09					1.46E-08				
8.14E-09					1.63E-08				
8.88E-09					1.54E-08				
5.98E-07	2.13E-05	0.000297	0.000257	0.000193	8.09E-07	1.25E-05	0.000101	8.5E-05	0.000138

Case2

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
9.05E-06	5.78E-05	0.000555	0.000221	0.000425	3.12E-06	1.84E-05	5.49E-05	9.46E-05	0.000443
5.57E-06	6.71E-05	0.000134	0.000555	0.00029	2.10E-06	1.51E-05	2.99E-05	5.49E-05	0.00023
2.44E-06	7.97E-05	0.000712			1.26E-06	1.23E-05	2.80E-05		
1.46E-06	5.95E-05	0.000142			7.51E-07	1.05E-05	2.39E-05		
1.05E-06	3.20E-05				5.16E-07	8.38E-06			
2.51E-08	2.06E-05				2.64E-09	6.23E-06			
2.17E-08	1.83E-05				2.44E-09	6.05E-06			
1.87E-08	1.43E-05				2.26E-09	4.50E-06			
1.62E-08					2.11E-09				
1.43E-08					1.97E-09				
5.71E-09					1.05E-09				
5.39E-09					1.01E-09				

5.10E-09					9.66E-10				
4.83E-09					9.28E-10				
4.59E-09					8.92E-10				
1.31E-06	4.37E-05	0.000386	0.000388	0.000358	5.17E-07	1.02E-05	3.42E-05	7.47E-05	0.000336

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.52E-05	9.73E-05	0.000406	0.000344	0.0022	2.24E-05	3.06E-05	0.000213	9.11E-05	0.000251
8.67E-06	8.12E-05	0.000697	0.000406	0.000719	1.12E-05	3.34E-05	0.000498	0.000213	0.000146
4.82E-06	7.49E-05	0.000357			5.72E-06	4.52E-05	2.70E-04		
2.84E-06	6.36E-05	1.31E-04			3.10E-06	4.41E-05	4.97E-05		
1.25E-05	4.56E-05				2.10E-06	2.53E-05			
2.94E-08	3.01E-05				1.87E-08	1.97E-05			
2.58E-08	2.48E-05				1.58E-08	2.49E-05			
2.26E-08	2.45E-05				1.34E-08	2.78E-05			
2.00E-08					1.14E-08				
1.78E-08					9.83E-09				
7.38E-09					3.22E-09				
7.01E-09					3.03E-09				
6.67E-09					2.86E-09				
6.35E-09					2.70E-09				
6.06E-09					2.56E-09				
2.94E-06	5.53E-05	0.000398	0.000375	0.00146	2.97E-06	3.14E-05	0.000258	0.000152	0.000198

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
6.13E-06	6.32E-05	0.000498	0.000169	0.000266	0.003595	0.016471	0.059286	0.11573	763.65
4.04E-06	5.73E-05	0.001325	0.000498	0.000198	0.003659	0.010315	0.038329	0.059286	0.33594
1.93E-06	6.67E-05	0.000788			0.002644	0.010859	0.02747		
1.02E-06	5.26E-05	1.61E-04			0.003037	0.006958	0.01793		
6.82E-07	2.69E-05				0.002083	0.007394			
3.32E-08	1.51E-05				0.000843	0.005322			
2.81E-08	1.20E-05				0.000998	0.005109			

2.37E-08	9.36E-06				0.000795	0.004358			
2.02E-08					0.000825				
1.74E-08					0.00078				
5.67E-09					0.000502				
5.33E-09					0.000403				
5.02E-09					0.000487				
4.75E-09					0.000357				
4.50E-09					0.000452				
9.3E-07	3.79E-05	0.000693	0.000333	0.000232	0.001431	0.008348	0.035754	0.087508	381.993

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
7.84E-06	7.93E-05	0.000829	0.000227	0.000465	6.17E-06	3.29E-05	0.000247	9.66E-05	0.000234
4.41E-06	7.25E-05	0.002713	0.000829	0.000251	3.51E-06	3.75E-05	0.000494	0.000247	1.17E-04
2.20E-06	1.10E-04	0.001649			1.73E-06	5.04E-05	2.14E-04		
1.28E-06	1.05E-04	2.72E-04			1.10E-06	3.66E-05	4.60E-05		
8.44E-07	3.77E-05				6.69E-07	1.38E-05			
2.58E-08	1.93E-05				2.60E-08	9.87E-06			
2.31E-08	1.50E-05				2.19E-08	9.89E-06			
2.08E-08	1.31E-05				1.83E-08	1.02E-05			
1.88E-08					1.54E-08				
1.72E-08					1.32E-08				
8.13E-09					3.95E-09				
7.76E-09					3.70E-09				
7.41E-09					3.47E-09				
7.10E-09					3.27E-09				
6.80E-09					3.08E-09				
1.11E-06	5.65E-05	0.001366	0.000528	0.000358	8.86E-07	2.51E-05	0.00025	0.000172	0.000176

Case3

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.27E-05	1.10E-04	0.000348	0.000216	0.000482	6.08E-06	1.85E-05	6.06E-05	1.13E-04	0.000331
8.37E-06	9.97E-05	0.00036	0.000348	0.000331	4.49E-06	1.60E-05	3.79E-05	6.06E-05	0.000358
6.30E-06	7.77E-05	0.000317			3.71E-06	1.42E-05	2.51E-05		
4.07E-06	5.40E-05	0.000148			2.66E-06	1.29E-05	2.16E-05		
2.17E-06	3.82E-05				1.82E-06	1.26E-05			
1.43E-07	2.60E-05				1.27E-07	1.02E-05			
1.38E-07	1.98E-05				1.03E-07	9.92E-06			
1.26E-07	1.56E-05				1.16E-08	7.92E-06			
1.04E-07					8.38E-08				
9.31E-08					6.79E-08				
2.44E-08					6.39E-08				
2.18E-08					1.34E-08				
1.91E-08					1.31E-08				
1.68E-08					1.12E-08				
2.21E-08					9.87E-09				
2.29E-06	5.52E-05	0.000293	0.000282	0.000406	1.28E-06	1.28E-05	3.63E-05	8.67E-05	0.000344

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.39E-06	2.21E-05	0.000115	7.70E-05	0.000173	1.84E-06	1.46E-05	8.23E-05	4.68E-05	0.000101
1.57E-06	1.85E-05	0.000158	0.000115	0.000108	1.04E-06	1.26E-05	0.000115	8.23E-05	6.39E-05
1.16E-06	1.60E-05	0.000165			7.73E-07	1.05E-05	9.95E-05		
7.99E-07	1.42E-05	4.68E-05			4.98E-07	9.12E-06	2.74E-05		
5.72E-07	1.21E-05				4.18E-07	6.82E-06			
5.51E-08	7.30E-06				3.67E-08	4.32E-06			
2.70E-08	4.59E-06				1.92E-08	2.73E-06			
2.29E-08	3.43E-06				1.72E-08	2.29E-06			
1.61E-08					1.23E-08				
1.21E-08					8.97E-09				
3.25E-09					1.92E-09				
2.99E-09					1.77E-09				

3.04E-09					1.90E-09				
2.61E-09					1.53E-09				
2.58E-09					2.79E-09				
4.43E-07	1.23E-05	0.000121	9.58E-05	0.000141	3.11E-07	7.87E-06	8.11E-05	6.46E-05	8.26E-05

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.31E-06	7.18E-05	0.000159	8.44E-05	0.000178	0.000202	0.000721	0.00194	0.003357	352.62
1.13E-05	4.87E-05	0.000246	0.000159	0.000117	0.000192	0.000701	0.001561	0.00194	0.007713
1.05E-05	3.49E-05	0.000317			0.000146	0.000593	0.001238		
2.64E-06	3.19E-05	1.47E-04			0.000105	0.000452	0.000874		
2.29E-06	2.79E-05				9.81E-05	0.000395			
1.56E-06	6.84E-05				4.24E-05	0.000376			
1.24E-06	6.57E-05				4.90E-05	0.000309			
1.07E-06	7.12E-06				4.84E-05	0.000232			
8.90E-07					4.03E-05				
6.93E-07					4.01E-05				
2.11E-07					1.57E-05				
1.88E-07					1.83E-05				
1.58E-07					1.93E-05				
1.54E-07					1.64E-05				
1.36E-06					1.59E-05				
2.57E-06	4.45E-05	0.000217	0.000122	0.000147	6.99E-05	0.000472	0.001403	0.002648	176.3139

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
5.54E-06	8.41E-05	0.000238	0.000135	0.000246	4.84E-06	3.43E-05	0.000144	8.26E-05	0.000168
3.13E-06	6.72E-05	0.000394	0.000238	0.000164	2.53E-06	3.56E-05	0.00025	0.000144	1.15E-04
2.42E-06	5.17E-05	0.000496			1.88E-06	2.70E-05	2.18E-04		
1.82E-06	3.81E-05	1.59E-04			1.45E-06	2.16E-05	5.61E-05		
8.98E-07	2.71E-05				7.69E-07	1.49E-05			
6.35E-08	1.50E-05				6.40E-08	8.57E-06			
4.17E-08	1.04E-05				3.68E-08	7.57E-06			

3.95E-08	7.93E-06				3.32E-08	6.23E-06			
2.83E-08					1.97E-08				
2.46E-08					1.66E-08				
6.48E-09					3.10E-09				
6.08E-09					2.89E-09				
5.77E-09					2.84E-09				
5.33E-09					2.31E-09				
6.79E-09					8.18E-09				
9.36E-07	3.77E-05	0.000322	0.000186	0.000205	7.77E-07	1.95E-05	0.000167	0.000113	0.000142

Case4

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.82E-06	2.46E-05	7.61E-05	0.000104	0.000233	9.41E-07	2.30E-06	3.94E-06	4.29E-06	0.001723
1.44E-06	2.06E-05	8.55E-05	7.85E-05	0.000177	8.65E-07	2.02E-06	3.31E-06	3.87E-06	5.12E-05
8.08E-07	1.93E-05	0.000128			7.38E-07	1.76E-06	2.81E-06		
4.23E-07	2.06E-05	8.78E-05			6.81E-07	1.75E-06	2.57E-06		
2.14E-07	2.41E-05				5.46E-07	1.51E-06			
1.00E-08	1.66E-05				1.37E-07	1.34E-06			
1.02E-08	9.99E-06				2.40E-07	1.19E-06			
9.55E-08	5.62E-06				2.18E-07	1.13E-06			
9.87E-09					1.40E-07				
8.70E-09					1.62E-07				
2.95E-09					2.13E-07				
2.53E-09					3.80E-07				
2.39E-09					3.66E-07				
2.16E-09					2.56E-07				
3.48E-09					2.72E-07				
3.89E-07	1.77E-05	9.43E-05	9.10E-05	2.05E-04	4.10E-07	1.63E-06	3.16E-06	4.08E-06	8.87E-04

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.30E-06	9.91E-06	2.45E-05	2.91E-05	6.68E-05	1.82E-08	5.68E-08	1.84E-07	2.92E-07	1.91E-05

7.28E-07	8.76E-06	3.64E-05	2.67E-05	4.99E-05	1.62E-08	4.67E-08	1.23E-07	2.19E-07	1.22E-06
5.07E-07	1.12E-05	0.000125			1.44E-08	4.03E-08	9.13E-08		
2.40E-07	1.28E-05	6.81E-05			1.26E-08	3.47E-08	7.01E-08		
1.01E-07	1.86E-05				1.13E-08	3.01E-08			
4.73E-09	1.53E-05				3.55E-09	2.63E-08			
3.89E-09	5.37E-06				3.05E-09	2.31E-08			
3.82E-09	2.26E-06				3.11E-09	2.04E-08			
3.32E-09					2.99E-09				
3.12E-09					2.82E-09				
1.34E-09					2.50E-09				
1.31E-09					2.43E-09				
1.15E-09					2.38E-09				
1.19E-09					2.07E-09				
2.72E-09					2.68E-09				
1.93E-07	1.05E-05	6.36E-05	2.79E-05	5.83E-05	6.68E-09	3.48E-08	1.17E-07	2.56E-07	1.01E-05

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.74E-06	1.08E-05	3.05E-05	4.50E-05	0.000121	0.000892	0.00354	0.016606	0.024606	446.08
7.89E-07	1.04E-05	3.73E-05	3.46E-05	7.11E-05	0.000853	0.002979	0.009708	0.019278	0.076155
4.14E-07	1.24E-05	7.70E-05			0.000803	0.002569	0.006679		
2.38E-07	1.38E-05	4.11E-05			0.000744	0.002162	0.00444		
1.11E-07	1.43E-05				0.000644	0.001832			
5.45E-09	1.09E-05				0.000238	0.001415			
5.20E-09	5.04E-06				0.00024	0.001177			
4.17E-09	2.97E-06				0.000247	0.00097			
4.14E-09					0.000235				
3.68E-09					0.000209				
1.68E-09					0.000109				
1.46E-09					0.000112				
1.40E-09					0.000116				

1.43E-09					0.000115				
3.02E-09					0.000106				
2.21E-07	1.01E-05	4.65E-05	3.98E-05	9.62E-05	3.77E-04	2.08E-03	9.36E-03	2.19E-02	2.23E+02

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.91E-06	1.03E-05	4.08E-05	6.34E-05	0.000207	1.12E-06	7.43E-06	1.79E-05	2.44E-05	4.43E-05
1.14E-06	1.01E-05	4.36E-05	5.28E-05	9.68E-05	6.35E-07	6.84E-06	3.22E-05	2.13E-05	3.84E-05
6.25E-07	1.18E-05	0.000107			3.63E-07	8.48E-06	9.02E-05		
3.18E-07	1.40E-05	5.19E-05			2.04E-07	9.16E-06	4.35E-05		
1.50E-07	1.88E-05				8.92E-08	1.13E-05			
6.00E-09	1.72E-05				4.60E-09	8.74E-06			
5.38E-09	7.34E-06				3.92E-09	4.05E-06			
4.84E-09	3.37E-06				3.43E-09	2.11E-06			
4.54E-09					3.40E-09				
4.22E-09					2.97E-09				
1.64E-09					1.00E-09				
1.78E-09					1.13E-09				
1.40E-09					9.20E-10				
1.51E-09					1.04E-09				
2.09E-09					3.51E-09				
2.78E-07	1.16E-05	6.09E-05	5.81E-05	1.52E-04	1.62E-07	7.26E-06	4.59E-05	2.29E-05	4.14E-05

Case5

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
4.40E-06	5.41E-05	0.000351	0.000324	0.000649	8.21E-08	1.51E-07	1.93E-07	7.54E-08	1.31E-05
2.57E-06	5.42E-05	0.000708	0.000259	0.000381	5.91E-08	5.26E-08	1.27E-07	1.55E-07	1.46E-07
1.47E-06	5.64E-05	0.000394			5.05E-08	5.77E-08	9.10E-08		
7.49E-07	3.91E-05	0.000118			5.31E-08	1.44E-07	1.00E-07		
4.13E-07	2.78E-05				5.19E-08	1.07E-07			
2.51E-08	1.89E-05				5.29E-08	5.30E-08			

2.36E-08	1.33E-05				1.04E-07	4.74E-08			
2.34E-08	7.96E-06				1.96E-07	7.01E-08			
1.99E-08					8.00E-08				
1.92E-08					5.65E-08				
7.07E-09					7.97E-08				
6.53E-09					1.11E-07				
5.35E-09					2.55E-07				
5.55E-09					2.74E-07				
5.17E-09					1.14E-07				
6.50E-07	3.40E-05	3.93E-04	2.92E-04	5.15E-04	1.08E-07	8.52E-08	1.28E-07	1.15E-07	6.65E-06

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
1.70E-06	1.90E-05	9.08E-05	9.07E-05	0.000202	7.48E-09	2.90E-08	1.19E-07	4.00E-07	2.20E-06
1.11E-06	1.55E-05	0.000165	7.88E-05	0.000121	6.66E-09	2.32E-08	7.56E-08	2.98E-07	5.85E-07
6.51E-07	1.35E-05	9.57E-05			5.96E-09	1.91E-08	5.16E-08		
3.68E-07	1.20E-05	3.22E-05			5.11E-09	1.54E-08	3.76E-08		
2.01E-07	9.83E-06				5.02E-09	1.29E-08			
1.45E-08	8.17E-06				2.27E-09	1.11E-08			
1.04E-08	5.38E-06				2.18E-09	9.48E-09			
9.65E-09	3.13E-06				2.14E-09	8.27E-09			
8.15E-09					2.00E-09				
8.26E-09					1.91E-09				
2.39E-09					1.17E-09				
2.07E-09					1.15E-09				
2.18E-09					1.15E-09				
1.96E-09					1.16E-09				
2.36E-08					1.10E-09				
2.74E-07	1.08E-05	9.58E-05	8.47E-05	1.62E-04	3.10E-09	1.61E-08	7.09E-08	3.49E-07	1.39E-06

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.93E-06	2.98E-05	0.000161	0.000171	0.000305	0.003011	0.011753	0.058585	0.065072	598.83

2.03E-06	2.57E-05	0.000275	0.000145	0.000199	0.00266	0.010521	0.03242	0.05357	0.27187
1.08E-06	2.40E-05	0.000205			0.002872	0.009104	0.022432		
5.85E-07	1.82E-05	6.29E-05			0.002013	0.005929	0.019265		
2.61E-07	1.63E-05				0.002115	0.00624			
1.82E-08	1.24E-05				0.000864	0.004964			
1.89E-08	8.41E-06				0.000889	0.003698			
1.48E-08	5.01E-06				0.000641	0.004091			
1.22E-08					0.000783				
1.43E-08					0.0007				
4.30E-09					0.000407				
3.22E-09					0.000332				
3.35E-09					0.000407				
3.21E-09					0.000332				
2.83E-09					0.000313				
4.65E-07	1.75E-05	1.76E-04	1.58E-04	2.52E-04	1.22E-03	7.04E-03	3.32E-02	5.93E-02	3.00E+02

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.08E-06	2.94E-05	0.000143	0.000243	0.00089	2.50E-06	1.53E-05	7.15E-05	9.90E-05	0.000182
1.65E-06	2.37E-05	0.000116	0.000214	0.000367	1.36E-06	1.43E-05	7.34E-05	8.75E-05	1.17E-04
9.23E-07	1.80E-05	7.97E-05			7.05E-07	1.41E-05	6.84E-05		
4.62E-07	1.93E-05	3.71E-05			4.05E-07	1.49E-05	2.61E-05		
2.36E-07	1.75E-05				2.03E-07	1.38E-05			
1.54E-08	1.23E-05				9.74E-09	9.09E-06			
1.36E-08	9.51E-06				1.01E-08	5.86E-06			
1.24E-08	5.49E-06				6.15E-09	3.88E-06			
1.14E-08					7.70E-09				
1.09E-08					1.10E-08				
3.65E-09					2.89E-09				
3.56E-09					3.66E-09				
3.11E-09					2.88E-09				
3.14E-09					1.66E-09				

2.94E-09					1.46E-09				
4.29E-07	1.69E-05	9.40E-05	2.29E-04	6.29E-04	3.48E-07	1.14E-05	5.98E-05	9.32E-05	1.49E-04

Case6

O1A1					F3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.95E-06	6.32E-05	0.000848	0.00029	0.00052	1.48E-09	2.70E-08	8.51E-08	5.16E-07	5.14E-05
1.78E-06	7.72E-05	0.001192	0.000398	0.000267	1.43E-09	4.76E-08	2.07E-08	1.29E-07	1.79E-05
1.08E-06	8.07E-05	0.000395			1.34E-09	4.37E-08	1.11E-08		
5.40E-07	4.20E-05	0.0001			1.18E-09	1.65E-08	1.20E-08		
3.01E-07	1.88E-05				1.10E-09	4.98E-09			
2.80E-08	1.19E-05				6.97E-10	2.11E-09			
2.21E-08	8.47E-06				6.69E-10	1.87E-09			
1.98E-08	5.50E-06				6.63E-10	1.60E-09			
1.75E-08					6.53E-10				
1.84E-08					6.48E-10				
6.66E-09					5.57E-10				
6.32E-09					5.46E-10				
5.55E-09					5.76E-10				
5.49E-09					6.48E-10				
4.49E-08					6.34E-10				
4.55E-07	3.85E-05	6.34E-04	3.44E-04	3.94E-04	8.55E-10	1.82E-08	3.22E-08	3.22E-07	3.47E-05

C3A1					P3A1				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.49E-06	2.91E-05	3.82E-04	2.06E-04	0.00122	2.96E-06	2.76E-05	1.13E-04	7.26E-05	1.62E-04
1.41E-06	3.24E-05	0.00049	2.33E-04	0.000498	2.09E-06	3.33E-05	1.55E-04	9.06E-05	9.47E-05
8.03E-07	3.11E-05	2.74E-04			1.16E-06	2.95E-05	1.11E-04		
4.35E-07	2.54E-05	6.99E-05			4.70E-07	1.88E-05	3.82E-05		
2.39E-07	1.85E-05				2.70E-07	1.40E-05			
2.46E-08	9.06E-06				5.36E-08	7.43E-06			
2.00E-08	6.11E-06				4.70E-08	4.60E-06			
2.17E-08	3.72E-06				2.74E-08	4.57E-06			

1.66E-08					2.74E-08				
1.44E-08					2.09E-08				
6.39E-09					1.56E-08				
5.61E-09					8.69E-09				
5.02E-09					6.49E-09				
4.90E-09					9.02E-08				
4.69E-08					9.03E-09				
3.70E-07	1.94E-05	3.04E-04	2.20E-04	8.59E-04	4.84E-07	1.75E-05	1.05E-04	8.16E-05	1.28E-04

O2A2					F4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
2.64E-06	5.77E-05	0.000763	0.000169	0.000288	0.001135	0.004476	0.019701	0.014705	689.73
1.58E-06	6.03E-05	0.001597	0.000238	0.000156	0.001041	0.004032	0.01399	0.009444	0.098224
9.03E-07	5.77E-05	0.000632			0.001217	0.00413	0.011551		
4.72E-07	3.18E-05	1.13E-04			0.001117	0.003136	0.007404		
2.65E-07	1.81E-05				0.000774	0.001978			
2.01E-08	9.96E-06				0.000443	0.001851			
1.84E-08	6.80E-06				0.000343	0.002062			
2.02E-08	4.32E-06				0.000254	0.001763			
1.73E-08					0.000298				
1.52E-08					0.000348				
5.83E-09					0.000148				
5.57E-09					0.000185				
5.07E-09					0.000179				
4.53E-09					0.000127				
5.07E-08					0.00012				
4.01E-07	3.08E-05	7.76E-04	2.03E-04	2.22E-04	5.15E-04	2.93E-03	1.32E-02	1.21E-02	3.45E+02

C4A2					P4A2				
Pgamma	Pbeta	Palpha	Ptheta	Pdelta	Pgamma	Pbeta	Palpha	Ptheta	Pdelta
3.13E-06	7.58E-05	0.001441	0.000282	0.000469	1.70E-06	2.75E-05	1.69E-04	7.82E-05	0.00013
1.68E-06	9.38E-05	0.002861	0.000388	0.00023	1.12E-06	2.83E-05	2.75E-04	9.31E-05	7.62E-05
1.04E-06	9.27E-05	7.87E-04			6.74E-07	2.76E-05	1.42E-04		
5.48E-07	4.85E-05	1.47E-04			3.62E-07	1.68E-05	4.67E-05		
3.09E-07	2.16E-05				1.98E-07	8.90E-06			
2.81E-08	1.23E-05				1.65E-08	5.59E-06			
2.33E-08	8.62E-06				1.62E-08	4.47E-06			
2.11E-08	5.62E-06				1.47E-08	2.92E-06			
1.82E-08					1.32E-08				
1.80E-08					1.35E-08				
7.94E-09					3.47E-09				
6.99E-09					3.26E-09				
6.68E-09					3.22E-09				
6.47E-09					2.82E-09				
6.88E-08					3.24E-08				
4.61E-07	4.49E-05	1.31E-03	3.35E-04	3.49E-04	2.78E-07	1.53E-05	1.58E-04	8.57E-05	1.03E-04

Table (2): Mean power and standard deviations of frequency bands power of 6 normal subject

### Descriptive Statistics

Electrodes positions	Frequency bands power	Mean power in $\mu\text{v}^2$	Std. Deviation
<b>O1</b>	P <sub>Delta</sub>	2768	5860
	P <sub>Theta</sub>	585	756
	P <sub>Alpha</sub>	440	262
	P <sub>Beta</sub>	56.1	46.5
	P <sub>Gamma</sub>	2.8	4.4
<b>F3</b>	P <sub>Delta</sub>	315	317
	P <sub>Theta</sub>	35.1	39.2
	P <sub>Alpha</sub>	16.4	17.2
	P <sub>Beta</sub>	5.95	5.9
	P <sub>Gamma</sub>	5.1	0.5
<b>C3</b>	P <sub>Delta</sub>	513	547
	P <sub>Theta</sub>	157	124
	P <sub>Alpha</sub>	195	130
	P <sub>Beta</sub>	30.6	27.8
	P <sub>Gamma</sub>	1.84	2.7
<b>P3</b>	P <sub>Delta</sub>	104	88.3
	P <sub>Theta</sub>	75.7	68.9
	P <sub>Alpha</sub>	100	98.4
	P <sub>Beta</sub>	11.6	11.9
	P <sub>Gamma</sub>	0.78	1.1
<b>O2</b>	P <sub>Delta</sub>	231	117
	P <sub>Theta</sub>	232	179
	P <sub>Alpha</sub>	446	334
	P <sub>Beta</sub>	30.1	13.6
	P <sub>Gamma</sub>	0.86	0.9
<b>F4</b>	P <sub>Delta</sub>	286686787	76091953
	P <sub>Theta</sub>	54651	54318
	P <sub>Alpha</sub>	25860	22387
	P <sub>Beta</sub>	5730	4855
	P <sub>Gamma</sub>	998	851
<b>C4</b>	P <sub>Delta</sub>	314	176
	P <sub>Theta</sub>	266	157
	P <sub>Alpha</sub>	575	600.4
	P <sub>Beta</sub>	31.5	17.6
	P <sub>Gamma</sub>	0.64	0.3
<b>P4</b>	P <sub>Delta</sub>	125	47.03
	P <sub>Theta</sub>	95.2	48.1
	P <sub>Alpha</sub>	130	76.8
	P <sub>Beta</sub>	15.2	6.4
	P <sub>Gamma</sub>	0.54	0.3

الدراسة تحليل مطيافية اشارات تخطيط الدماغ لدى مرضى الصرع باستخدام تحليلات فورييه السريعة.

اعداد : اشرف محمد عبد عليان

اشراف : د . رشدي لثانة

د. حازم دوفش

ملخص:

تهدف هذه الدراسة إلى تحديد تأثير مرض الصرع على نطاقات التردد الخمسة لموجات الدماغ البشري : ألفا ، بيتا ، ثيتا ، دلتا ، وغاما. اشتملت عينة الدراسة على خمسة وثلاثين مريضاً يعانون من مرض الصرع ، حيث تم رصد النشاط الكهربائي لأدمغتهم عبر جهاز تخطيط الدماغ (EEG) ، فيما تم توثيق وتسجيل ذلك النشاط باستخدام نظام مرتبط بالحاسوب للحصول على تلك البيانات يدعى نظام نيكوليت نيكفو.

تم إجراء تحليل طيفي للموجات اعتماداً على جهاز تحويل فورييه السريع (FFT) بهدف استخراج قوة نطاقات التردد للموجات الخمسة المذكورة أعلاه ، واعتماداً على ذلك، خلصت هذه الدراسة الى استنتاج مفاده وجود متوسط قوة مرتفع في النطاقات الفرعية داخل معظم القنوات الموجودة في الموجة ثيتا ، في الوقت نفسه، وجود متوسط قوة منخفض في النطاقات الفرعية داخل معظم القنوات الموجودة في الموجة غاما.

بإمكان نتائج تخطيط الدماغ التي خلصت إليها هذه الدراسة أن تساعد الأطباء والمختصين على إجراء التشخيص الصحيح وتحديد أفضل السبل الممكنة لعلاج المرضى الذين يعانون من نوبات الصرع ؛ لذا توصي هذه الدراسة إلى حد كبير باستخدام جهاز تخطيط الدماغ (EEG) نظراً لقدرة هذه الجهاز على تفسير تلك الاضطرابات.