



# Diffusion Based Modeling of Human Brain Response to External Stimuli

Hamidreza Namazi, Vladimir V.Kulish

(Submitted on 3 Apr 2012)

Human brain response is the overall ability of the brain in analyzing internal and external stimuli in the form of transferred energy to the mind/brain phase-space and thus, making the proper decisions. During the last decade scientists discovered about this phenomenon and proposed some models based on computational, biological, or neuropsychological methods. Despite some advances in studies related to this area of the brain research there was less effort which have been done on the mathematical modeling of the human brain response to external stimuli. This research is devoted to the modeling of human EEG signal, as an alert state of overall human brain activity monitoring, due to receiving external stimuli, based on fractional diffusion equation. The results of this modeling show very good agreement with the real human EEG signal and thus, this model can be used as a strong representative of the human brain activity.

Comments: 20 pages

Subjects: **Analysis of PDEs (math.AP)**; Neurons and Cognition (q-bio.NC)

Cite as: **arXiv:1204.0576v1 [math.AP]**

## Submission history

From: Hamidreza Namazi Dr. [[view email](#)]

[v1] Tue, 3 Apr 2012 02:42:45 GMT (427kb)

*[Which authors of this paper are endorsers?](#)*

## Download:

- [PDF only](#)

Current browse context:

**math.AP**

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1204](#)

Change to browse by:

[math](#)

[q-bio](#)

[q-bio.NC](#)

## References & Citations

- [NASA ADS](#)

## Bookmark (what is this?)

