

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/238346061>

Application of ICA algorithm to EEG data from a visual attention experiment

Article in *Frontiers in Computational Neuroscience* · January 2008

DOI: 10.3389/conf.neuro.10.2008.01.069

CITATIONS

0

READS

48

4 authors:



Jan Kamiński

California Institute of Technology

34 PUBLICATIONS 259 CITATIONS

SEE PROFILE



Mateusz Gola

University of California, San Diego / Polish Ac...

67 PUBLICATIONS 336 CITATIONS

SEE PROFILE



Aneta Brzezicka

SWPS University of Social Sciences and Hum...

42 PUBLICATIONS 279 CITATIONS

SEE PROFILE



Andrzej Wrobel

Nencki Institute of Experimental Biology

121 PUBLICATIONS 1,296 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Towards the understanding of neuronal mechanisms of compulsive sexual behaviors (National Science Centre of Poland, 2015-2018) [View project](#)



Survey of Veterans' Sexual Health and Well-being [View project](#)

All content following this page was uploaded by [Andrzej Wrobel](#) on 10 February 2016.

The user has requested enhancement of the downloaded file.

[Prev](#) [Next](#)

 Topic: [All Abstracts](#)
Poster Presentation

Application of ICA algorithm to EEG data from a visual attention experiment

 Jan Kaminski^{1*}, M Gola², A Brzezicka² and A Wróbel¹

1 Nencki Institute of Experimental Biology, Poland

2 Warsaw School of Social Psychology, Poland

Scarce observations in human EEG studies indicated that enhanced beta activity which accompany certain experimental tasks may be used as an arousal index. In our cat studies (Wróbel et al. 2007) we have found that local field potential oscillations in beta band (12-29 Hz) might serve as a carrier for attentional activation within the visual system. Here we have adopted our animal model of shifting anticipatory attention demands between visual and auditory modalities to study alertness related changes of beta activity in human subjects. The ICA algorithm was applied to each participant's data and the whole analysis resulted with 11 components, which were later clustered among all subjects using k-means method. Results indicated increased alertness manifested by faster response to target stimuli in visual trials is accompanied by higher EEG activation in beta band in cluster with maximal amplitude in occipito-parietal sites. The shorter reaction time the amplitude of beta power appeared to be higher (this relation was most pronounced at lower beta power). This finding supports our hypothesis that beta band might serve as carrier for attentional activation within the visual system. This experiment proved also the usefulness of ICA algorithm application to EEG data, even with limited number (11) of channels.

References

1. Wróbel, A., Ghazaryan, A., Bekisz, M., Bogdan, W. i Kamiński, J. (2007). Two Streams of Attention-Dependent beta activity in the Striate Recipient Zone of Cat's Lateral Posterior-Pulvinar Complex. *Journal of Neuroscience* 27(9), 2230-2240.

Conference: Bernstein Symposium 2008. Munich, Germany, October 08 - 10, 2008.

Citation: Kaminski J, Gola M, Brzezicka A and Wróbel A (2008). Application of ICA algorithm to EEG data from a visual attention experiment. *Frontiers in Computational Neuroscience. Conference Abstract: Bernstein Symposium 2008*. doi: 10.3389/conf.neuro.10.2008.01.069

Copyright: © 2008 Kaminski, Gola, Brzezicka and Wróbel. This is an open-access publication subject to an exclusive license agreement between the authors and the Frontiers Research Foundation, which permits unrestricted use, distribution, and reproduction in any medium, provided the original authors and source are credited.

***Correspondence:** Jan Kaminski, Nencki Institute of Experimental Biology, Poland. j.kaminski@nencki.gov.pl

[Prev](#) [Next](#)


EEG Info

The Complete Neurofeedback Resource your therapy success-our benchmark
www.eeginfo.ch

Neural Microelectrode

Electrode arrays for neural recording/stimulation/drug delivery
www.NeuroNexusTech.com

