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SEMINAR & SPEAKER INFO

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Spatial and Temporal Targeting of Transcranial Magnetic Stimulation

Abstract:

Transcranial magnetic stimulation (TMS) is a non-invasive technique to alter neural activity in the brain. It is a widely used neuroscience tool, an FDA approved therapy for depression, and an experimental intervention in other psychiatric and neurological disorders. The TMS "dose" can be described by the spatial and temporal characteristics of the TMS-induced electric field. This presentation will discuss both aspects of TMS dose, focusing on (1) limitations of the spatial focality of TMS coils for stimulation of deep brain regions, and (2) controlling the functional focality of TMS to make it more effective by manipulating the magnetic pulse temporal shape with a novel controllable pulse parameter device (cTMS).

Speaker Bio:

Angel V. Peterchev received the A.B. degree in physics and engineering sciences from Harvard University and the M.S. and Ph.D. degrees in electrical engineering from the University of California, Berkeley. He is presently Assistant Professor at Duke University in the departments of Psychiatry, Electrical & Computer Engineering, and Biomedical Engineering. He directs the Brain Stimulation Engineering Lab which aims to improve brain stimulation technology and paradigms based on insights from electrical engineering, biophysics, neuroscience, and psychiatry. Dr. Peterchev has contributed to novel TMS devices with controllable pulse parameters, models and analysis of the electric field induced by transcranial magnetic and electric stimulation, and *in vivo* studies exploring the relationship between stimulation parameters and physiological response.

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