High-Definition transcranial Direct Current Stimulation: Non-invasive and targeted neuromodulation

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High-Definition transcranial Direct Current Stimulation (HD-tDCS) was developed by Prof. Marom Bikson and colleagues at The City College of New York in 2006. HD-tDCS allows for delivery of low-intensity electrical current to targeted brain regions, is low-cost, portable, and well-tolerated. HD-tDCS uses arrays of scalp electrodes, energized according to subject specific algorithms, to deliver current in an optimized and safe manner. HD-tDCS is under clinical trial for the treatment of neuropsychiatric disorders (including neuropathic pain) for stroke rehabilitation (including motor and speech) and as a neuromodulation tool for cognitive neuroscience (including accelerated learning). The technology and applications of HD-tDCS are reviewed.

About the Lecturer
Dr. Marom Bikson is an Associate Professor of Biomedical Engineering at The City College of New York of CUNY and co-direct of the Neural Engineering Group at the New York Center for Biomedical Engineering. Dr. Bikson's research group specializes in the rapid prototyping, regulatory clearance, clinical deployment of investigational medical devices including in areas of brain stimulation and surgery. Dr. Bikson's research also includes the mechanisms of electrical stimulation including animal models and computational models.

Website and publications at http://bme.ccny.cuny.edu/people/faculty/mbikson