



Department of Psychology  
The University of Hong Kong  
香港大學心理學系

Jan  
08  
2026

## Departmental Seminar

### Non-invasive Deep Brain Stimulation Technology: Developments and Applications



#### Prof. Xiaochu Zhang

Professor  
Life Sciences and Medicine Division  
University of Science and Technology  
of China

11:00a.m. – 12:00noon

Room 1103-1104, 11/F  
The Jockey Club Tower  
Centennial Campus  
The University of Hong Kong

#### Abstract

Transcranial electrical stimulation (tES) is currently one of the most commonly utilized non-invasive brain stimulation methods, increasingly becoming a staple tool in cognitive neuropsychology research and clinical interventions. However, it faces limitations such as limited depth of stimulation targets. Recently, the development of transcranial time-interfering (TI) electrical stimulation technology has enabled us to non-invasively stimulate deep brain regions and elicit behavioral and psychological effects. Our group first validated the safety and effectiveness of this technology in human subjects, focusing on motor regions. Furthermore, we discovered that this technology can non-invasively modulate the functional activities of the orbitofrontal cortex (OFC) and nucleus accumbens (NAc), leading to alterations in reward-reinforced learning behaviors. This technology holds promising applications for both scientific research and clinical practice in the future.

#### About the Speaker

Prof. Zhang Xiaochu, currently a full professor at the Life Sciences and Medicine Division of the University of Science and Technology of China. He is recognized by the Changjiang Scholar Award and a recipient of the Chinese Academy of Sciences Hundred Talents Program. He serves as associate editors of *Brain Sciences*, *Psychology and Psychotherapy: Theory, Research and Practice*, and also is on the editorial board and reviewer for numerous international leading journals. He is currently the deputy director of the Asian Association for the Study of Drug Abuse, the deputy director of the Addiction Imaging Branch of the Chinese Association for the Prevention and Treatment of Drug Abuse, the deputy director of the Anhui Drug Rehabilitation Research Association, the deputy director of the Anhui Drug Rehabilitation Work Association, the deputy director of the Anhui Psychological Association, the deputy director of the Anhui Social Psychology Association, and the executive deputy director of the Anhui Mental Health Education Research Association. His research have been published in internationally renowned journals including *Nature Human Behaviour*, *The American Journal of Psychiatry*, *Brain*, *Advanced Science*, *Biological Psychiatry*, *Molecular Psychiatry*. His research interests are: 1) the cognitive and neural basis of mental disorders such as addiction; 2) the cognitive and neural basis of the impact of new technologies on human psychology; 3) the application of non-drug new technologies in the treatment of mental disorders.

#### Zoom Meeting (For participants who couldn't attend the Seminar in person)

<https://hku.zoom.us/j/6985555998?pwd=V05yTGJWNTIzazd2OFZ0Q3FReHVkdz09>

Meeting ID: 698 555 5998 | Password: Psyc

~ All are Welcome ~

Enquiry: [xiaoqinghu@hku.hk](mailto:xiaoqinghu@hku.hk)

