



The Institution of Engineers, Malaysia

BangunanIngenieur, Lots 60/62, Jalan 52/4, Peti Surat 223, 46720 Petaling Jaya, Selangor Darul Ehsan
Tel: 03-79684001/2 Fax: 03-79577678 E-mail: sec@iem.org.my IEM Homepage: http://www.myiem.org.my

Talk On

“Stimulation of Beta Brainwave Rhythm using Isochronic Tones”

Organized by Engineering Education Technical Division, IEM
BEM Approved CPD/PDP Hours: 2___ Ref No: IEM16/HQ/253/T

Date : **20th September 2016 (Tuesday)**
Time : **5.30 pm – 7.30 pm** (*Refreshments will be served at 5.00 pm*)
Venue : C&S and TUS Lecture Room, 2nd Floor, Wisma IEM.
Speaker: **Dr David, N.V.**

SYNOPSIS

The surge of electric pulses and chemical reactions in human brain produce brain waves at five distinct frequency domains between 0.5 Hz and 100 Hz that are associated with different brain activities and characterize different mental states. The cerebral brain cells, which produce the frequency patterns in accordance to the brain activity, can be synchronized at a desired frequency by externally stimulating the cells using acoustical means including binaural beats (BB) and isochronic tones (IT). The states of alertness and focus can be traced to areas within the frontal lobes of the brain at beta brainwave frequencies (~ 20Hz). BB and IT sounds signals embedded in a background audio could provide better listening comfort to the subject. Electroencephalograph (EEG) signals due to resonance of the prefrontal cortex (PFC) with the induced aural stimuli are measured on a maiden group of ten healthy male human subjects. Both types of signals showed comparable results in synchronizing the brain to the beta rhythm from the baseline EEG potentials at pre-exposition stage. The post-exposition entrainment effect is sustained up to 5 minutes after exposure by 97% and 98% for BB and IT, respectively, compared to the EEG potentials at the synchronization stage. These results indicate that IT masked in a background audio performs as good as the embedded BB. IT can be directly applied to subjects via a pair of speakers whereas BB requires supply of signals via headphones hence providing the former the added advantage of open-environment listening.

BIODATA OF SPEAKER



David, N.V. earned his doctoral degree in Mechanical Engineering and Materials Science at Texas A&M University, USA in year 2009 under the auspices of Fulbright Fellowship, the Rice-Cullimore Scholarship – ASME Auxiliary, and the Malaysian Government. He obtained his degree in Mechanical & Materials Engineering from UKM in the year 1999. He is currently attached to the Faculty of Mechanical Engineering and is the Research Head at the Research Management Centre, Universiti Teknologi MARA in Shah Alam, Malaysia. His research interests include bio-composite engineering, viscoelasticity, psychoacoustics, brainwave entrainment and structural health monitoring. www.nvdavid.wix.com/nvdavid

Ir. Assoc. Prof. Dr. Mandeep Singh
Chairman
Engineering Education Technical Division, IEM
Session 2016 / 2017

ANNOUNCEMENTS TO NOTE:

- Preferential admission to talk shall be accorded to IEM members (pre-registration and online registration are NOT required).
- Nonmembers may also attend the talk but will need to pay a registration fee of RM50 and an administrative fee of RM15. GST is inclusive.
- Members of affiliated organizations upon producing their membership cards will be exempted from paying registration fee. Administrative fee is nevertheless applicable.
- Limited seats are available on a "first come first served" basis (maximum 100 participants).
- IEM members are reminded to produce membership cards for confirmation of attendance (CPD purpose) failing which a fee of RM25 will be imposed. GST inclusive.

ADMINISTRATIVE FEE

- Kindly be informed that an administrative fee of RM15 is payable for talks organized by IEM. GST is inclusive.
- The fee would be used to cover overhead costs, building maintenance expenses as well as contribute to Wisma IEM Building Fund.
- All contributions will be deeply appreciated by IEM.
- Student Members are however exempted.

PERSONAL DATA PROTECTION ACT

I have read and understood the IEM's Personal Data Protection Notice published on IEM's website at <http://www.myiem.org.my> and I agree to IEM's use and processing of my personal data as set out in the said notice.

CPD HOURS CONFIRMATION

Name:

Membership No:

Signature: