# HUMAN EXPOSURE TO A 60 HZ, 1800 MICROTESLA MAGNETIC FIELD: A NEURO-BEHAVIORAL STUDY

The effects of time-varying magnetic fields (MF) on humans have been actively investigated for the past three decades. One important unanswered question that scientists continue to investigate is the potential for MF exposure to have acute effects on human biology. Different strategies have been used to tackle this question using various physiological, neurophysiological and behavioral indicators. For example, researchers investigating electroencephalography (EEG) have reported that Extremely Low Frequency (ELF, < 300 Hz) MF can increase the resting occipital alpha rhythm (8-12 Hz) [1, 2]. Interestingly, other studies have demonstrated that human motor behavior can be modulated by ELF MF exposure, reporting that such an exposure can reduce anteroposterior standing balance oscillations [3, 4] or decrease physiological tremor intensity [5]. However, the main limitation in this domain is the difficulty of reproducing the results. A possible reason for this is the large variety of experimental approaches employed. Therefore, the aim of this project is to investigate the effects of a 60 Hz, 1800 μT MF exposure on physiological (i.e. heart rate and peripheral blood perfusion), neurophysiological (brain electrical activity), and behavioral (postural oscillations, voluntary motor functions, and physiological tremor) aspects in humans using a single experimental procedure. Though the results from this study suggest a subtle reduction of human standing balance with MF exposure, no effect appeared on other investigated parameters, suggesting that one hour of 60 Hz, 1800 μT MF exposure may modulate human involuntary motor control without being detected in the electrical activity of the brain.