

# Possibilities in clinical neurophysiology

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It is an open quest to evaluate performance and potential benefits of optically pumped magnetometer (OPM) in clinical neurophysiology.

This contribution discusses the performance, pitfalls, as well as the possibilities and limitations of OPM through multiple proof-of-principle experiments involving the measurement of various evoked potentials. In particular, we demonstrate that OPM are partially capable to measure evoked potentials of the retina (magneto-retinography, MRG), visual cortex (visual evoked potentials, VEP), somatosensory pathways (somatosensory evoked potential, SEP, see Figure 1), and muscle intrinsic reflexes - and furthermore - to gain new insights: For example, based on the vectorial analysis of the magnetic flux signal of peripheral nerves, brain or muscles, new perspectives in the investigations of neurophysiology are possible since the spatial information of e.g. propagating action potentials can be measured.

This contribution provides insights on the possibilities of OPM as well as its potential in neurophysiology.

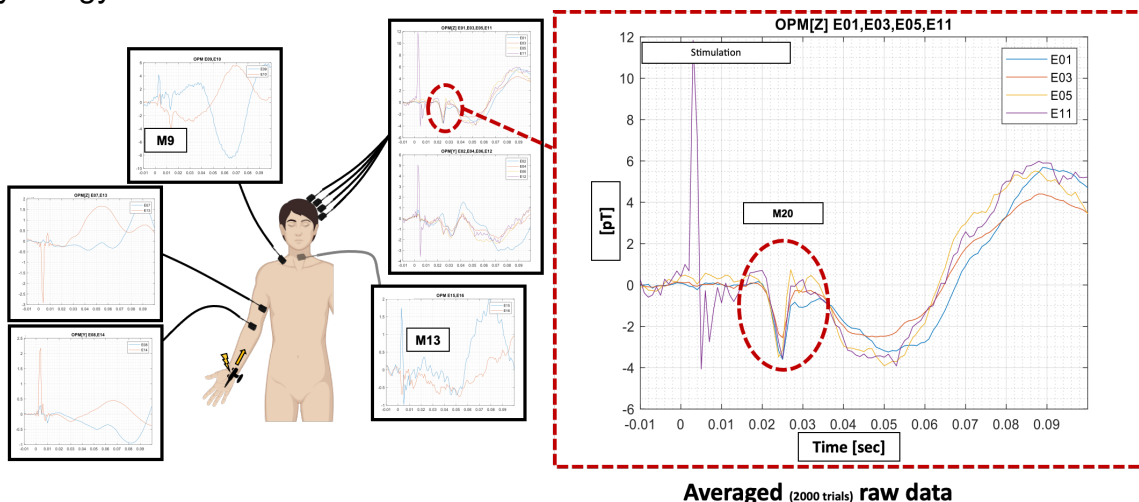


Figure 1: Illustration of the electrically evoked sensory responses with M9 located over Erb's point, M13 of the spinal cord, and M20 in the parietal lobe area.