

Concurrent EEG and OPM measurement

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With increasing dissemination of optically pumped magnetometers (OPMs), it is critical to implement largescale direct comparisons with similar state-of-the-art brain imaging techniques. Considering the improved accuracy in source-localization for combined EEG and MEG recordings¹, we are performing concurrent EEG and OPM measurements, featuring 64 EEG electrodes following a standard 10-10 system and 30 OPM sensors. Furthermore, we will conduct the same recordings in the same cohort of participants, using a SQUID-MEG system.

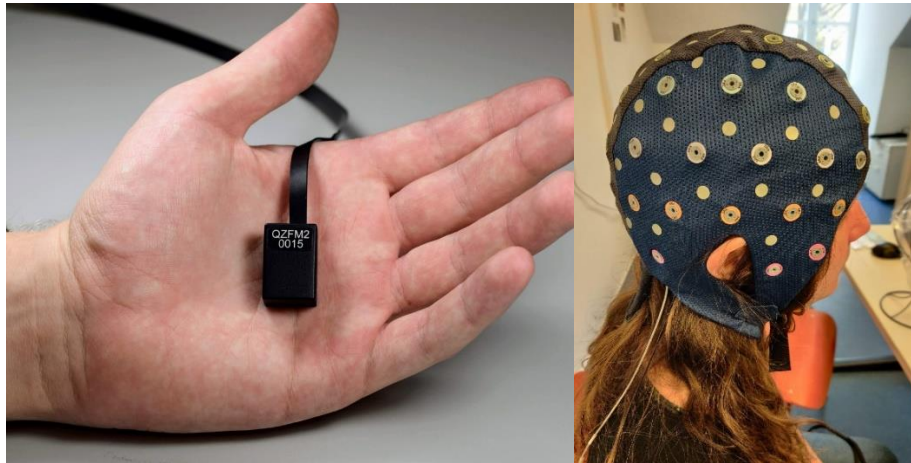


Figure 1: The concurrent EEG-OPM measure will be conducted with OPM sensors by QuSpin inc and a state-of-the-art EEG-cap with a 64-channel array by ANT Neuro inc

We will apply a battery of well-established cognitive neuroscience paradigms, recorded with more than 30 participants for direct comparison between the above methods. In doing so, we will be able to compare SNR, signal amplitude and source localization for each single methodology as well as for combined EEG-OPM. Lastly, we will research the viability of OPM-MEG towards understanding circuit dysfunctions and biomarkers in clinical settings with an additional cohort of schizophrenia patients.

References

- [1] D. Sharon, M. S. Hämäläinen, R. B. Tootell, E. Halgren & J. W. Belliveau, *Neuroimage* **36(4)**, 1225-35 (2007).