INTER-SUBJECT DIFFERENCES IN ORIENTATIONS AND LOCATIONS OF STIMULATION TARGETS IN THE VISUO-MOTOR NETWORK

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MOTIVATION

Background

- tDCS is a promising non-invasive technique
- is applied in neurological & mental health disorders
- "standard" stimulation: cathode/ anode over target
- research implies maximal effect for stimulation parallel to the target orientation[3]

Goal

- optimize tDCS montage individually[1,2]

→account for individual **location** & **orientation**

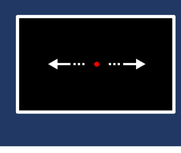
- determine realistic inter-individual variability of V5 and FEF functional localization

How much do **locations**, **orientations** & **individual montages** differ between participants?

METHODS

Data

- N = 19 healthy participants
- modalities: (1) **fMRI** and (2) combined **MEG** & **EEG**
- smooth pursuit task



localization

- based on fMRI data
- FEF & V5 were extracted individually

head model

- realistic FEM headmodel
- 6 compartments
- calibrated skull conductivity

orientation

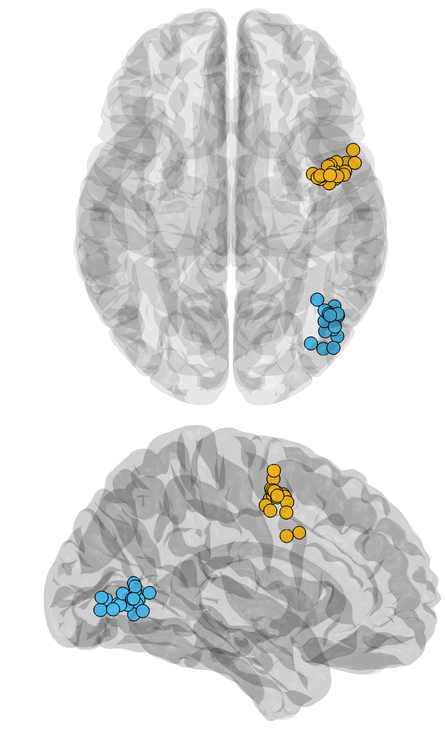
- based on combined EMEG data
- LCMV beamformer with UNG constraint

montages

- D-CMI optimization[1]
- max. 1.5 mA / electrode
- 8 electrodes

RESULTS

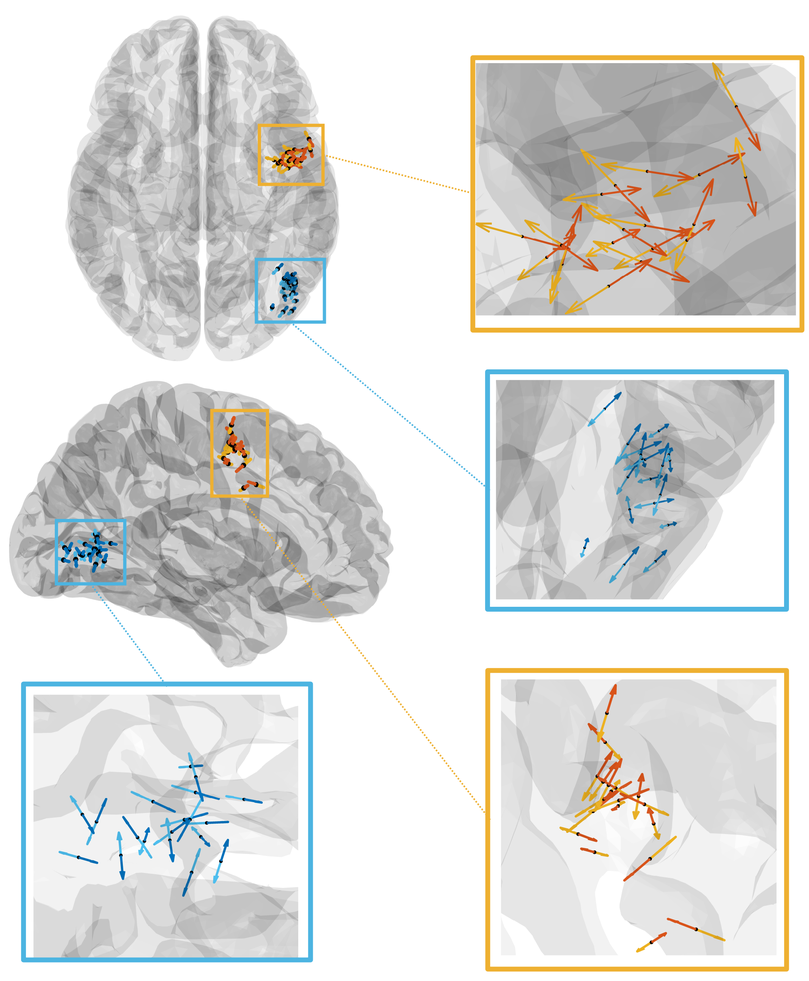
A Locations



Range **V5** [mm]		Range **FEF** [mm]	
x	[36.1; 48.5]	x	[37.3; 56.1]
y	[-79.5; -57.3]	y	[-4.8; 10.3]
z	[-3.5; 10.7]	z:	[32.0; 61.5]

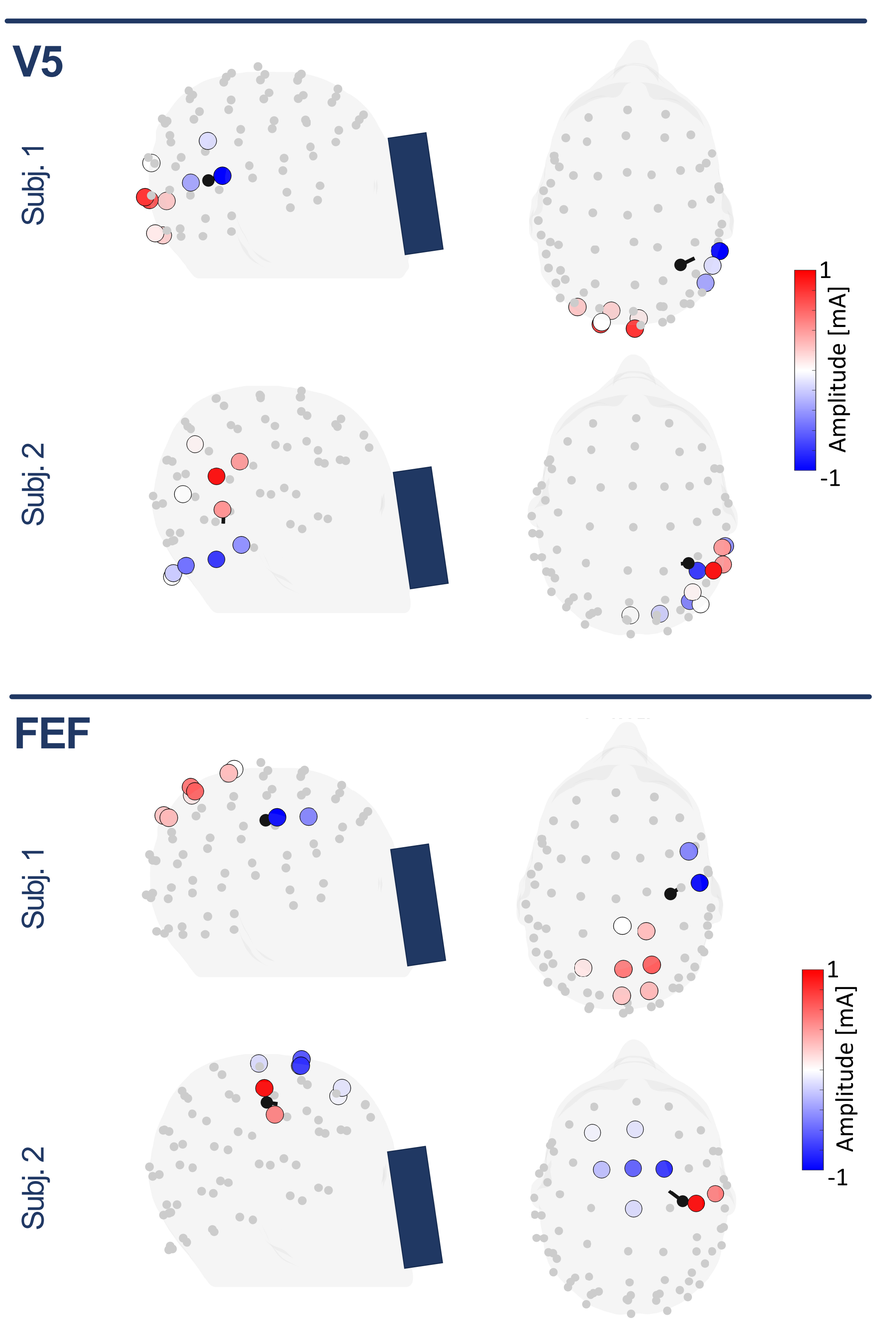
Target Locations in MNI space

B Orientations



Target Orientations in MNI space

C Montages



Individual montages for 2 participants in individual native space

CONCLUSION

- locations & orientations of V5 & FEF vary strongly between participants
- Personalized montages can consider this variability by flexible placement of electrodes and weighting of current intensities

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ACKNOWLEDGEMENTS

This work was supported by the Deutsche Forschungsgemeinschaft (DFG), projects WO1425/10-1, GR2024/8-1 & LE1122/7-1 and by the Bundesministerium für Gesundheit (BMG) as project ZMI1-2521FSB006, under the frame of ERA PerMed as project ERAPERMED2020-227.

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Funded by DFG Deutsche Forschungsgemeinschaft German Research Foundation
Bundesministerium für Gesundheit