Microstimulation above threshold at sites in the frontal eye fields (FEF) evokes saccades to specific locations in visual space. FEF also plays an important role in spatial working memory. We were interested in whether subthreshold stimulation during a memory period could be used to probe spatial memory storage and processing in FEF. To do so, we performed stimulation below threshold while an animal planned a saccade to a remembered cue and asked whether this influenced the subsequent saccade endpoint.

**Microstimulation alters memory across the population**

- **Microstimulation mimics a corollary discharge signal**
  - **Hypotheses:**
    - **Repulse**
    - **Attract**
    - **Remap**
  - **Memory-guided saccades**
    - **Microstimulation alters memory-guided saccades**
    - **Microstimulation only affects currently stored memories**

**Stimulation effect is modulated by task instruction**

- **World-fixed task**
  -**Gas-fixed task**

**Conclusions**

- **Delay period microstimulation in FEF can introduce a small corollary discharge signal into the oculomotor spatial memory system.**
  - Saccades on stimulated trials are deviated antiparallel to the evoked saccade vector.
  - This suggests that subthreshold stimulation can introduce a small (1-2°) corollary discharge signal without driving a saccade.
  - Stimulation appears to guide saccades.
  - Stimulation has an effect only when applied during a memory period.
  - The stimulated memory can be flexibly used by animals in a task-dependent manner.

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