Who’s controlling the brakes? Pulsed inhibitory alpha EEG is linked to preparatory activity in the fronto-parietal network measured concurrently with the event-related optical signal (EROS).

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Metacharacter Masking
- Visual targets followed by a non-overlapping mask are undetected on 25-75% of trials. What differs from trial to trial?

Task: Indicate if the Target was present on any given trial.

Aim: To identify neural predictors of target detection.

Methods: EROS and EEG were simultaneously recorded from 10 participants in two sessions. Each trial began with a fixation cross.
- On 50% of trials, a target was presented, followed by a non-overlapping metacontrast mask;
- 25% of trials were target only.
- 25% of trials were mask only.
Participants indicated on each trial if they detected the target.

Behavioral Results: 68% detection rate, 9% False Alarm rate.

Event Related Optical Signal (EROS)

ERS / EEG Predictors of Detection

ERS sorted by EEG Alpha before target onset

Conclusions:
- Alpha is a Pulsed Inhibition.
  - The phase and power of alpha at target onset can predict subsequent visual awareness.
  - Increased fronto-parietal activity correlates with Alpha modulation, predicts detection.
  - Activity is correlated across these areas, and oscillates within each area, over time at ~10 Hz.

Frontal Regions – Top down Alpha Modulator.
- Right Parietal area – Modulated Alpha activity.

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