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Abstract:

Perceptual stability requires changes in visual processing with every eye movement. We are investigating where and when these changes occur in visual cortex. We recorded extracellularly from neurons in the middle temporal (MT), and the medial superior temporal (MST) areas of the macaque brain while the animals were making voluntary or reflexive eye movements.

We found that in these neurons, changes in both the firing rate and the local field potentials often preceded actual eye movements, consistent with a predictive code. We have previously shown that many individual neurons in these areas carry eye position signals that predict both the size and the direction of an upcoming saccade. Here we report anticipatory changes in firing rates and local fields before fast eye movements that – on average – led to a reduced perisaccadic firing rate. Importantly, however, these changes were highly variable across individual cells. This suggests that these activity changes are unlikely to serve only as a reduction of the gain of the visual response that could hide the spurious retinal motion generated by the saccade. We are currently investigating whether these complex activity changes may be understood in terms of the remapping of feature selective information across saccades.