

Authors: Bremmer F, Kubischik M, Hoffmann K-P, Krekelberg B

Title: Space representation across fast eye movements

Conference: European Conference on Visual Perception

Date: 2010

<http://www.perceptionweb.com/abstract.cgi?id=v100563>

Abstract:

Eye-movements challenge visual processing. Several studies have shown that spatial processing during voluntary eye-movements is not veridical. In a series of psychophysical studies in humans we investigated whether such a mislocalization can also be observed during reflexive eye-movements, ie optokinetic-nystagmus (OKN) and afternystagmus (OKAN). Our results clearly show that spatial perception during OKN and OKAN is not veridical. Interestingly, a direct comparison showed substantial differences for localization during both eye-movements. In a second set of experiments we investigated the neuronal processes underlying the representation of spatial information during visually guided saccades by recording single cell activity from behaving monkeys. Recordings were performed in visual cortical areas MT, MST, LIP, and VIP. Stimulus responses in most neurons in areas MT and MST were suppressed, but in all cases the visual RF was eye-centered. VIP activity was also often suppressed, but the spatial reference-frame of the responses was sometimes not eye-centered. Responsiveness of LIP neurons was in many cases dominated by performance of the saccade itself. At the population level, the responsive region in area LIP was enlarged perisaccadically with a maximum width at the time of saccade-onset. This magnification of the responsive region could account for the behaviorally observed perisaccadic mislocalization.