

SEMINAR ANNOUNCEMENT

DRC-UPC

Foveal vision: the role of microsaccades in fixation and discrimination

Dr. Josselin Gautier (Anglia Ruskin University)

Tuesday 21th April, 12h

Auditori Joan Salvado (Paseo 22 de Juliol, 660. Terrassa)

(https://foot.upc.edu/lescola/instal-lacions/auditori-joan-salvado?set_language=en)

Abstract

The back of our eyes is covered by the retina and its millions of photoreceptors acquiring the light information. At the centre of the retina lies the fovea where the photoreceptors are more densely packed and where acuity is the best. Thus, the human eye movements are mainly composed of saccades and vergence aiming at bringing the visual object of interest onto this fovea for subsequent fixation.

However, even during fixations, our eyes are never at rest. They perform tiny fixational eye movements (FEM) whose potential roles have been subject to renewed interest over the past decade. FEM can be decomposed into tremor, drift and microsaccades moving the image at different distances onto the fovea, respectively over a single, a dozen or a hundred of photoreceptors. Microsaccades have been considered as binocular conjugated eye movements mainly because their monocular eye movements do not prevent fading and break the Hering's law of equal innervation. We recently showed with the professor H. Bedell from University of Houston that monocular microsaccades 1) happen in significant proportion (40-80%) among all microsaccades, 2) cannot be considered as a physiological noise nor as a recording noise 3) differ in frequency during fixation vs foveal discrimination tasks. Importantly their occurrence appears modulated by stimuli visibility, suggesting a potential role in fine vision: to correct for small vergence errors or to recenter a target's image toward a preferred retinal locus. This seminar will bring some observations for these two hypotheses. Finally, the study of fixational eye movements has some potential clinical implications in the treatment of degraded vision for patient with neurological disorders.

More information about the speaker can be found in <http://www.irisa.fr/temics/staff/gautier/>.