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Motion Perception and the Moving Observer

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Traditionally, motion perception research is performed under strict conditions. Observers were immobilized by chinrests, often in dark rooms where sparse stimuli were presented on standard CRT-displays. This has given us some good insight in the thresholds of our motion detection system. However, most motion that we process and perceive is generated as a result of our own movements (optic flow). This also means that under those conditions other senses, in particular the vestibular system, supply the brain with relevant information as well. Therefore, in the current experiments, we measured our sensitivity to motion stimuli in a moving environment. Our observers were secured over a 6 degrees of freedom motion base, in which we can physically move the observer in line with the visual stimuli. In the main experiment participants are asked to find a single dot that moved inconsistent with the flow field. We tested the performance when the observer is stationary, and moving, both as a function of time after onset of the movement of the stimulus. Surprisingly, the results show that observers are at least as good under moving conditions, like driving, as under stationary conditions, if not better.