Summary 2:

Self-motion illusions in immersive virtual reality environments

Motion is perceived differently in virtual environments (VE) and the real world. To resolve this issue, many methods, such as up/down scaling the environment or rotation in VE have been introduced. However, such approaches often distort space cognition and introduce discrepancies between the real and virtual environments. The paper proposes an alternative way to alter the user's self-motion perception in immersive VR by using optical flow manipulation in four ways to induce the illusion: Layered motion, Contour filtering, Change blindness, and Contrast inversion. Users were placed in a room with head mounted displays and instructed to walk 2m physically and asked to judge "Was the virtual movement smaller or larger than the physical movement?" Results showed that using such manipulation to the optical flow in the user's periphery vision could make users perceive that their self-motion in the VE matched their movements in the real world, although users noticed the visual illusions applied.

BibTeX:

http://ieeexplore.ieee.org/document/5759434/