A translating observer viewing a rigid environment experiences "motion parallax". For example, if you are riding in a car and look out the side window at a dog lying on a farmhouse porch, you will notice that the trees beyond the house seem to move with you, while the mailbox in front of the house moves opposite your direction. This retinal movement of images provides a cue to the relative depth of objects in the environment.

Nadler, et al, (Nature 2008) showed that monkeys cannot perceive depth sign ("near" or "far") unambiguously without an extra-retinal signal. Something else is entering the brain to perceive depth. Moreover, retinal motion alone cannot mathematically determine relative depth.

How does math say the dog laying on the porch helps your depth perception? Nawrot & Joyce (Vis Res 2006) showed experimentally that the ratio of the rate of image motion on the retina over the rate of smooth eye pursuit was important in perception of depth from lateral motion.

Nawrot & Saroyan (Vis Res 2009) developed a mathematical theory of the motion/pursuit ratio and verified experimentally that people use the extra-retinal eye pursuit cue in central vision.

Nadler, Nawrot, et al, (Neuron 2009) showed that monkeys use the extra-retinal pursuit signal neurologically to perceive depth sign. This is a big deal because until recently most experts "knew" that the extra retinal signal was vestibular or "convergence"... It settles the question from the earlier Nature article and it suggests that there might be a neural basis for our mathematical formula.