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  Perception of visual motion in 3d space

  For many species, when an object looms towards them, thus causing the image to expand on their retina, this typically elicits an escape or avoidance response. Similarly, object image expansion on the retina can also result when the animal approaches an object and this input can also be used in the modulation of locomotor behavior (e.g., braking to avoid a collision). One variable that has proven critical for computing the time-to-collision is tau, which is optically defined as visual angle of an approaching object divided by the momentary rate of expansion. In this talk, I will present our recent research on human observers involving a careful re-evaluation of the tau hypothesis by separating the contribution of different types of visual information. I will also present results from experiments comparing the processing of impending collision in object motion and self-motion.

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