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Predator pursuit strategies: how do falcons and hawks chase prey? SUZANNE AMADOR KANE, MARJON ZAMANI, ANDREW FULTON, LEE ROSENTHAL, Physics Department, Haverford College, Haverford PA 19041 — This study reports on experiments on falcons, goshawks and red-tailed hawks wearing miniature videocameras mounted on their backs or heads while pursuing flying or ground-based prey. Videos of hunts recorded by the raptors were analyzed to determine apparent prey positions on their visual fields during pursuits. These video data then were interpreted using computer simulations of pursuit steering laws observed in insects and mammals. A comparison of the empirical and modeling data indicates that falcons use cues due to the apparent motion of prey on the falcon's visual field to track and capture flying prey via a form of motion camouflage. The falcons also were found to maintain their prey's image at visual angles consistent with using their shallow fovea. Results for goshawks and red-tailed hawks were analyzed for a comparative study of how pursuits of ground-based prey by accipeters and buteos differ from those used by falcons chasing flying prey. These results should prove relevant for understanding the coevolution of pursuit and evasion, as well as the development of computer models of predation on flocks,and the integration of sensory and locomotion systems in biomimetic robots.

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