



Mechanical Engineering Seminar Series

How flying snakes glide: turning the body into a wiggling wing

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Professor

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[ME Seminar Zoom link](#) (QR Code below)

Password 5777



Abstract

Flying snakes are perhaps the world's most unconventional gliders, turning their body into a wing by changing shape and undulating in the air. In this talk, I'll discuss our experimental and theoretical efforts to understand the biomechanical features that underly this unique form of flight. In particular, I'll highlight a recent study that parses the snake's inertial mechanics and aerodynamics. Our lab uses engineering tools to study fundamental questions about how animals work, but we also aim to transfer that knowledge to bio-inspired design. I'll briefly discuss such efforts, in which we've mostly been forced to extract lessons from things that don't work.

Bio

Dr. Jake Socha is a professor in the Department of Biomedical Engineering and Mechanics at Virginia Tech. He earned B.S. degrees in physics and biology from Duke University in 1994 and a Ph.D. in biology (with a focus on biomechanics) from the University of Chicago in 2002. After graduate school, he was the Ugo Fano Postdoctoral Fellow at Argonne National Laboratory, studying insect flow systems using synchrotron x-ray imaging at the Advanced Photon Source. His research program at Virginia Tech combines both interests, investigating the biomechanics and functional morphology of flows in and around organisms. Current research foci include: the behavior, biomechanics, and aerodynamics of gliding flight in vertebrates, particularly flying snakes; and the biomechanics and physiology of internal flows involved in breathing, feeding, and circulation in insects. Prior to entering science, he was a member of the Teach for America national teacher corps, serving as the sole high school science teacher at Centerville High School in southern Louisiana.

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