

Abstract Submitted
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Concertina locomotion of snakes HAMIDREZA MARVI, DAVID HU,
Georgia Institute of Technology — Snake-like modes of locomotion may easily traverse water as well as land. In this combined experimental and theoretical investigation, we investigate the accordion-like motion of snakes, in which snakes move by a series of extensions and contractions of their bodies. Snakes are filmed performing concertina locomotion on flat cloth surfaces arranged at various angles of inclination. Using the body kinematics of the snakes and friction properties of their skin, we model snake locomotion using a three-mass model propelled by sliding friction. Particular attention is paid to maximizing propulsive efficiency using optimum rates of contraction and snake scales as brakes for ascending inclines.

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