

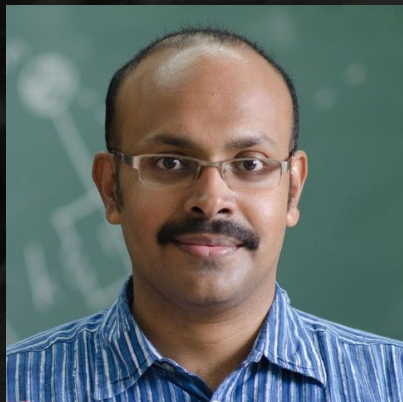
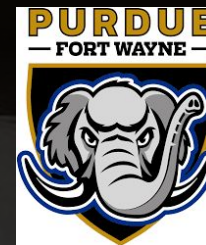


BALL STATE
UNIVERSITY

The Mathematical Laws of Morphology and Biomechanics

Tuesday 12th October 2021 noon EDT

Virtual Presentation: <https://purdue.webex.com/meet/aselvite>



Prof. Madhusudhan Venkadesan

Yale University

School of Engineering and Applied Sciences

Form and function of feet and fins

The stiffness of propulsive appendages, such as feet or fins, is important for locomotor function. In this talk, I show that curvature-induced stiffness is the common principle underlying the stiffness of both primate feet and rayed fish fins. We use mathematical models, physical mimics, and biological experiments to derive the relationship between curvature and stiffness, and also track the evolution of foot curvature among hominins. The principle is evident in a drooping currency note that significantly stiffens upon slightly curling it in the transverse direction.



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