



BME Seminar Series 03

1 June 2023 (Thursday), 10:30 a.m.
B6619 Conference Room, 6/F, YEUNG

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<https://www.cityu.edu.hk/bme/>
(organized by Dr. Xinge Yu)

Origami-based Mechanical Metamaterials for Robotics and Beyond

Abstract

Origami, the art of paper folding, is being transformed by scientists, mathematicians, and engineers into innovative design approaches to harness its unique properties, i.e., crease-dependent tunable properties. Inspired by this property, this talk will be started by presenting the stability of origami structures for on-demand deployability and compressibility through designed loading and unloading passes, its applications in robotics, followed by curved origami patterns to enable in-situ stiffness manipulation covering negative, zero, and positive stiffness, and origami-enabled mechanical haptics with application in the metaverse. These studies open ways to design origami-based mechanical metamaterials with variable applications.

Biosketch

Hanqing Jiang is a Chair Professor of Mechanical Engineering at Westlake University in China. Before joining Westlake University in June 2021, he was a faculty member of Mechanical Engineering at Arizona State University from 2006 to 2021. He received his Ph.D. from Tsinghua University in 2001, majoring in Solid Mechanics. His current research interests include the origami and kirigami based mechanical metamaterials and robotics, mechanics of lithium-metal batteries, and unconventional electronics. He has published 5 book chapters and more than 140 peer-reviewed journal papers. He was elected to an ASME Fellow in 2016. He is a member of the executive committee of the Materials Division of ASME and is the President of the Society of Engineering Science in 2022. Selected honors include an NSF CAREER Award (2009), ASME Worcester Reed Warner Medal (2021), etc.

