

Department of Civil, Environmental and Mechanical Engineering

UNIVERSITY OF TRENTO

SOLID AND STRUCTURAL MECHANICS GROUP

Multistable curved-crease origami structures: Going beyond traditional straight-crease origami to design shells that snap



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Tuesday, June 17, 2024 10.30 am – 11.30 am, DICAM, 2R room

Abstract

In recent years, origami, the art of folded paper, has been the inspiration for designing engineering structures that are deployable, manufacturable, tunable, and reprogrammable. Commonly, the folds are straight lines, and the panels are flat. However, curved-crease origami is also possible, in which shell folds along curves and panels bend, which provides additional design freedom while adding geometric and mechanical complexity.

In this talk I will present an introduction to the differential geometry of curved-crease origami and present a general design method inspired by curved-crease origami for multistable curved shells. Then, I will present numerical results that describe how geometric parameters affect mechanical behavior, and conclude with some potential applications across a variety of length scales.

About the speaker

Kevin Liu is a 3rd year graduate student at Princeton University working with Prof. Glaucio Paulino. He studies the geometry, kinematics, and mechanics of origami-inspired engineering structures.



The seminar is supported by the European Community under projects: ERC-CoG "SFOAM - Self-Foldable Origami-Architected Metamaterials" (ERC-2022-COG-101086644-SFOAM, PI: D. Misseroni) ERC-AdG "BEYOND - Beyond hyperelasticity: a virgin land of extreme materials" (ERC-ADG-2021-101052956-BEYOND, PI: D. Bigoni)

