Undergraduate research project: Mathematical analysis of origami materials

Project description: Model and analyze how novel materials, such as origami (Fig 1), respond to sudden changes in state, like in a car crash (Fig 2). Models will be discovered using machine learning, and analyzed using dynamical systems theory.
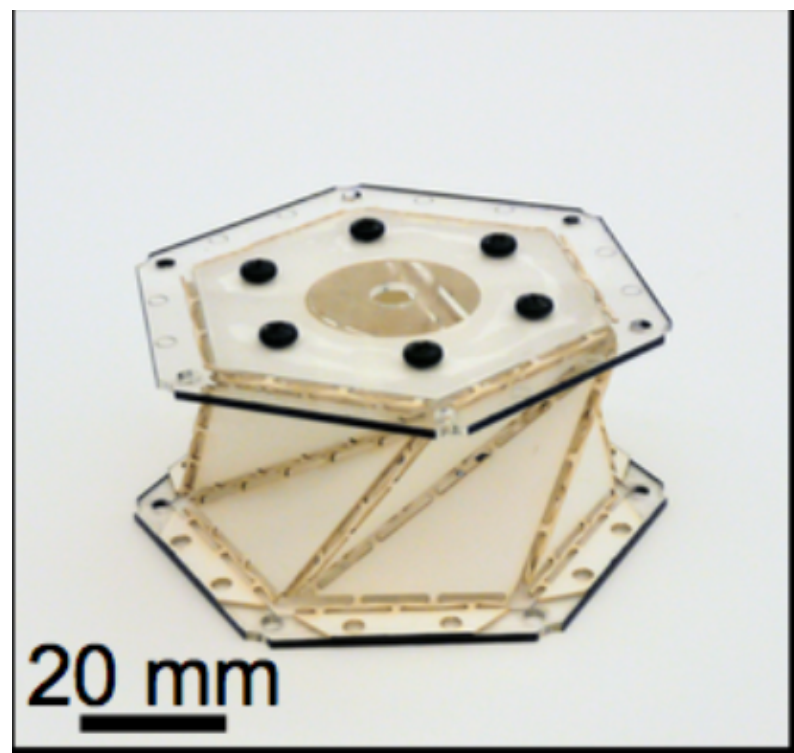

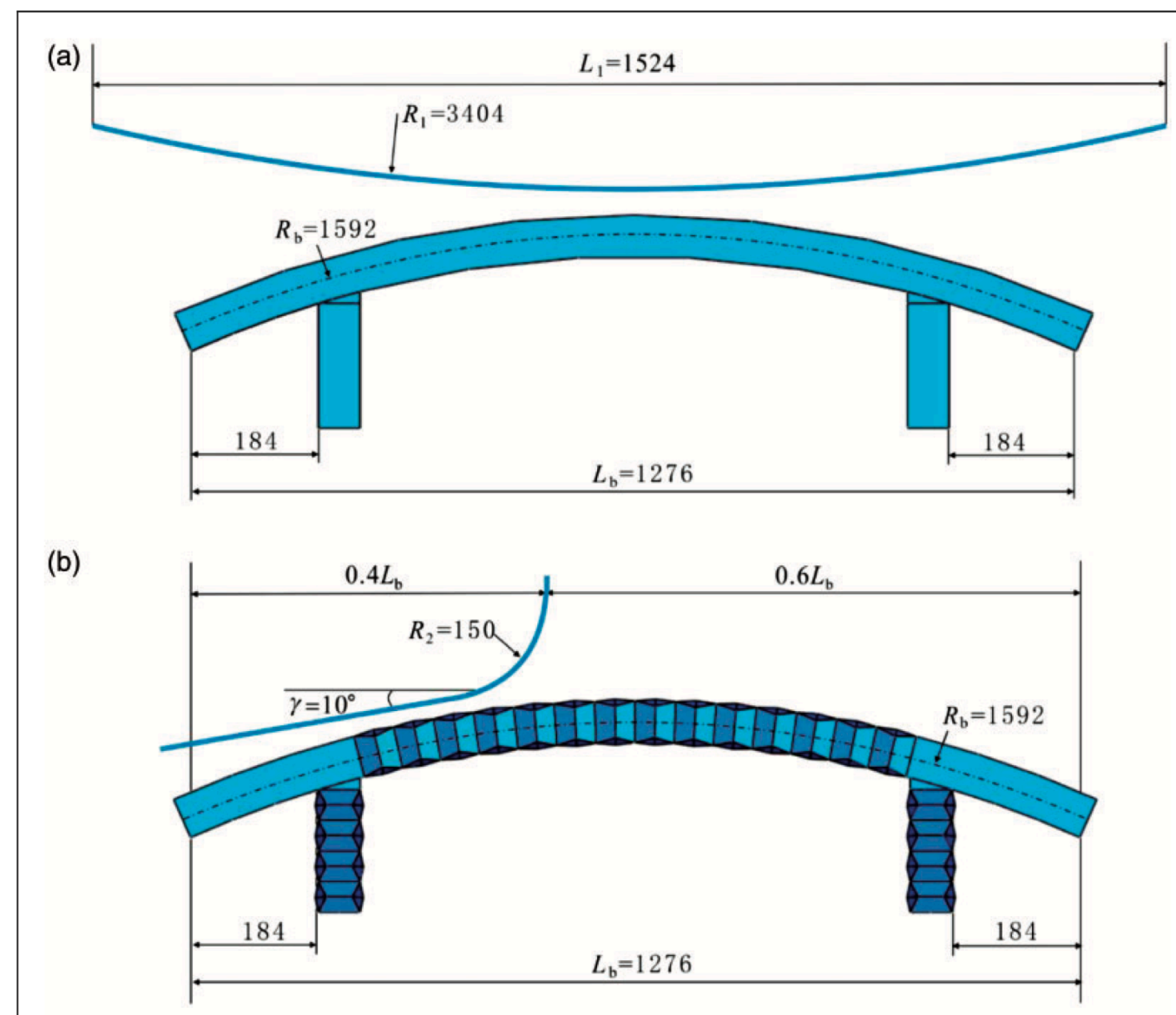Fig 1: Origami meta-material. Image credit Yang (2018)

Fig 2: Comparison of standard automobile crash box (top) and origami based crash box (bottom). Image credit Kusyairi (2018)

Project details

- When: Summer 2025, either during the Semester or within the *Exkursionswoche* (9 - 15 June 2025)
- Requirements: Basic knowledge of differential equations and basic programming skills
- Credits: 8 ETCS as Seminar *Differentialgleichungen*
- Advisors: Prof. Dr. Michael Herrmann (TU) and Prof. Dr. Christopher Chong (Bowdoin College, USA).
- Language: German and/or English
- Contact and further information: michael.herrmann@tu-braunschweig.de

Technische Universität Braunschweig

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