



Maria Sakovsky

Assistant Professor of Aeronautics and Astronautics

Bio

BIO

Maria Sakovsky's work focuses on the use of shape adaptation to realize space structures with reconfigurable geometry, stiffness, and even non-mechanical performance (ex. electromagnetic, optical). Particular focus is placed on the mechanics of thin fiber reinforced composite structures, the interplay between composite material properties and structural geometry, as well as embedded functionality and actuation of lightweight structures. The work has led to applications in deployable space structures, reconfigurable antennas, and soft robotics.

Maria Sakovsky received her BSc in Aerospace Engineering from the University of Toronto. Following this, she completed her MSc and PhD in Space Engineering at Caltech, where she developed a deployable satellite antenna based on origami concepts utilizing elastomer composites. She concurrently worked with NASA's Jet Propulsion Laboratory on developing cryogenically rated thin-ply composite antennas for deep space missions. For her ongoing research on physically reconfigurable antennas, she was awarded the ETH Zürich postdoctoral fellowship as well as the Innovation Starting Grant.

ACADEMIC APPOINTMENTS

- Assistant Professor, Aeronautics and Astronautics

PROGRAM AFFILIATIONS

- Stanford SystemX Alliance

Teaching

COURSES

2023-24

- Introduction to Mechanics of Composite Materials: AA 156 (Spr)
- Large Spacecraft Structures: AA 114Q (Aut)
- Spacecraft Design Laboratory: AA 236B (Win)

2022-23

- Introduction to Mechanics of Composite Materials: AA 156 (Spr)
- Large Spacecraft Structures: AA 114Q (Aut)
- Spacecraft Design Laboratory: AA 236B (Win)

2021-22

- Large Spacecraft Structures: AA 114Q (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Harsh Patel, Tanay Topac

Doctoral Dissertation Advisor (AC)

Kai Jun Chen, Enquan Chew

Orals Evaluator

Harsh Patel, Tanay Topac

Master's Program Advisor

Yong Lin He, Thomas Huang, Samuel Montagut Agudelo, Aditi Pattabhiraman, Yash Taneja

Doctoral (Program)

Catherine Catrambone, Eva Marinopoulou

Publications

PUBLICATIONS

- **Dynamically reprogrammable stiffness in gecko-inspired laminated structures** *SMART MATERIALS AND STRUCTURES*
Chen, K., Sakovsky, M.
2024; 33 (1)
- **A multi-stable deployable quadrifilar helix antenna with radiation reconfigurability for disaster-prone areas.** *Nature communications*
Bichara, R. M., Costantine, J., Tawk, Y., Sakovsky, M.
2023; 14 (1): 8511
- **Electromagnetic Reconfiguration Using Stretchable Mechanical Metamaterials.** *Advanced science (Weinheim, Baden-Wurttemberg, Germany)*
Sakovsky, M., Negele, J., Costantine, J.
2023: e2203376
- **Thin ply composite materials with embedded functional elements for cryogenic environments** *MATERIALS LETTERS*
Sakovsky, M., Mihaly, J.
2023; 330
- **A Highly Multi-Stable Meta-Structure via Anisotropy for Large and Reversible Shape Transformation.** *Advanced science (Weinheim, Baden-Wurttemberg, Germany)*
Risso, G., Sakovsky, M., Ermanni, P.
2022: e2202740
- **A thin -shell shape adaptable composite metamaterial** *COMPOSITE STRUCTURES*
Sakovsky, M., Ermanni, P.
2020; 246