




Manan Arya

Assistant Professor of Aeronautics and Astronautics

 Curriculum Vitae available Online

Bio

BIO

Manan Arya leads the Morphing Space Structures Lab. His research is on shape-changing structures, including spacecraft structures that are folded for launch and then unfolded in space, and also morphing robots. Previously, he was a technologist in the Advanced Deployable Structures Group at the Jet Propulsion Laboratory (JPL), which is managed for NASA by Caltech.

ACADEMIC APPOINTMENTS

- Assistant Professor, Aeronautics and Astronautics

PROGRAM AFFILIATIONS

- Stanford SystemX Alliance

PROFESSIONAL EDUCATION

- PhD, California Institute of Technology (2016)
- Masters, California Institute of Technology (2012)
- BAsC in Engineering Science, University of Toronto (2011)

LINKS

- Lab site: <https://morphingspace.stanford.edu/>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Manan Arya leads the Morphing Space Structures Laboratory. His research is on structures that can adapt their shape to respond to changing requirements. Examples include deployable structures for spacecraft that can stow in constrained volumes for launch and then unfold to larger sizes in space, terrestrial structures with variable geometry, and morphing robots. Key research thrusts include lightweight fiber-reinforced composite materials to enable innovative designs for flexible structures, and the algorithmic generation of the geometry of morphing structures – the arrangement of stiff and compliant elements – to enable novel folding mechanisms.

He has published more than 20 journal and conference papers and has been awarded 5 US patents. Prior to joining Stanford, he was a Technologist at the Advanced Deployable Structures Laboratory at the Jet Propulsion Laboratory, California Institute of Technology, where he developed and tested breakthrough designs for space structures, including deployable reflectarrays, starshades, and solar arrays.

Teaching

COURSES

2023-24

- Introduction to Aeronautics and Astronautics: AA 100 (Win)
- Spacecraft Design: AA 236A (Aut)
- Stability of Structures: AA 245 (Spr)

2022-23

- Introduction to Aeronautics and Astronautics: AA 100 (Win)
- Spacecraft Design: AA 236A (Aut)
- Stability of Structures: AA 245 (Spr)

2021-22

- Lightweight Structures: AA 151 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Faisal As'ad

Doctoral Dissertation Advisor (AC)

Connie Liou, Megan Ochalek

Orals Evaluator

Tanay Topac

Master's Program Advisor

Kadin Hendricks, Cameron Hilman, Zain Jamal, Galen Jiang, Albert Kwan, Xiaohan Mei, Faress Zwain

Doctoral (Program)

Alexandra Haraszti

Publications

PUBLICATIONS

- **Modelling science return from the lunar crater radio telescope on the far side of the moon.** *Philosophical transactions. Series A, Mathematical, physical, and engineering sciences*
Pisanti, D., Goel, A., Gupta, G., Arya, M., Byron, B., Chahat, N., Lazio, J., Goldsmith, P., Bandyopadhyay, S.
2024; 382 (2271): 20230073
- **Free Vibration of a Panel Supported by a Shear Compliant Two-Flexure Hinge** *AIAA JOURNAL*
Yasara Dharmadasa, B., Mejia-Ariza, J., Sauder, J., Focardi, P., Case Bradford, S., Arya, M., Lopez Jimenez, F.
2024
- **Origami-Wrapped Structures with Corrugated Unfolded Forms** *AIAA JOURNAL*
Kreider, M., Arya, M.
2024
- **NASA's starshade technology development activity**
Willems, P. A., Shaklan, S., Hu, R., Martin, S., Lisman, D., Ferraro, S., Stegman, M., Harness, A. D., Freebury, G., Arya, M., Coyle, L. E., Matsuura, S., Perrin, et al

SPIE-INT SOC OPTICAL ENGINEERING.2022

- **Crease-free biaxial packaging of thick membranes with slipping folds** *INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES*
Arya, M., Lee, N., Pellegrino, S.
2017; 108: 24-39