

# Stanford

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## Manan Arya

Assistant Professor of Aeronautics and Astronautics

 Curriculum Vitae available Online

### Bio

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#### 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)
- BSc in Engineering Science, University of Toronto (2011)

#### LINKS

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

### Research & Scholarship

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#### 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

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### COURSES

#### 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 Advisor (AC)

Megan Ochalek, Jung Eun Park

#### Master's Program Advisor

Kadin Hendricks, Galen Jiang, Albert Kwan, Xiaohan Mei

## Publications

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### PUBLICATIONS

- **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