Contribution ID: **14** Type: **not specified**

Inflatable morphing matter

Tuesday, 21 October 2025 14:00 (1 hour)

Inflatable morphing matter represents a frontier in programmable architecture and soft robotics, enabling dramatic shape changes driven by simple pressure inputs. In this talk, I will present a unified vision for how instabilities and geometric design can be harnessed to create inflatable systems that morph, lock, and reconfigure on demand. Starting from the fundamentals of buckling, snapping, and bistability in curved membranes and shell structures, I will show how these nonlinear phenomena can be used not as failure modes, but as functional tools to decouple input (pressure) from output (shape), and achieve multistable target states.

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