IST AUSTRIA
Institute of Science and Technology

Institute colloquium

# Multistable structures - from deployable structures to robots


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Multistable structures can reversibly change between multiple stable configurations when a sufficient energetic input is provided. While originally the field focused on understanding what governs the snapping, more recently it has been shown that these systems also provide a powerful platform to design a wide range of smart structures.

In this talk, I will first show that pressure-deployable origami structures characterized by two stable configurations provide opportunities for a new generation of large-scale inflatable structures that lock in place after deployment and provide a robust enclosure through their rigid faces. Then, I will demonstrate that the propagation of transition waves in a bistable one-dimensional linkage can be exploited as a robust mechanism to realize structures that can be quickly deployed. Finally, while in the first two examples multistability is harnessed to realize deployable architectures, I will demonstrate that bistable building blocks can also be exploited to design crawling and jumping robots. Unlike previously proposed robots that require complex input control of multiple actuators, a simple, slow input signal suffices to make our system move, as all features required for locomotion are embedded into the architecture of the building blocks.


## Monday, May 10, 2021 04:00pm - 05:00pm

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