



USC Viterbi School of Engineering

# Seminar

Ming Hsieh Department of Electrical and Computer Engineering



## Insights into physical intelligence from individual and collective animal behavior

**Eva Kanso**

Professor of Aerospace and Mechanical Engineering

Professor of Physics and Astronomy

University of Southern California

**Monday, January 29, 2024 | 2:00pm – 3:00pm PST | EEB 132**

**Abstract:** I will discuss three problems inspired by Nature: (i) the snap-through instability utilized in plants and animals to generate rapid motions accompanied by a release of elastically-stored energy; (ii) synchrony and biological functions of cilia beating in human tissues; and (iii) spontaneous transitions in the emergent collective phases in fish schools. From these examples, I will draw and discuss three paradigms of “mechanical intelligence” that may be incorporated in the design of engineered systems.



**Bio:** **Eva Kanso** is a Professor in the Department of Aerospace and Mechanical Engineering and the Department of Physics and Astronomy at the University of Southern California, where she also holds the named chair “Z. H. Kaprielian Fellow in Engineering”. Kanso earned PhD and Masters degrees in Mechanical Engineering (1999, 2003) and Applied Mathematics (2002) from UC Berkeley, followed by a post-doctoral training at Caltech (2003-2005). She served as a Program Director at the National Science Foundation (2021-2023). Kanso's research focuses on studying fundamental problems in the biophysics of

cellular and subcellular processes and the physics of animal behavior, both at the individual and collective levels. A central theme in her work is the role of the mechanical environment, specifically the fluid medium and fluid-structure interactions, in shaping and driving biological functions.

**Host:** Dr. Mihailo Jovanovic, [mihailo@usc.edu](mailto:mihailo@usc.edu)

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