



13th Annual EXPO 2026

PLENARY SPEAKER

Dr. Greg Morrison

Associate Professor, Department of Physics

University of Houston

Senior Investigator

Center for Theoretical Biological Physics

Live Oak Ballroom, Setzer Student Center

April 30 - from 9:15 to 10:00 AM

SHORT BIOGRAPHY

Greg Morrison received his PhD in Physics from University of Maryland at College Park, with postdoctoral training at Harvard University. After completing his postdoc, he joined the IMT Institute for Advanced Study in Lucca Italy as an assistant professor. In 2016 he joined the Physics Department at the University of Houston, where he is now an Associate Professor. Dr Morrison's research includes statistical physics and polymer physics applied to biologically relevant systems on a coarse-grained level, and applications of network science to complex systems on multiple scales. He is also a senior investigator at the Center for Theoretical Biological Physics, and manages the Frontiers in Science summer undergraduate research program in biophysics.

A BRIEF TOUR OF BIOPHYSICS

Essential biological processes are driven by complex chemical reactions and physical dynamics. Biophysical modeling can reduce the extremely complicated interdependencies in all biological systems to simpler models that can be directly studied using coarse-grained theoretical models. In this talk, we will discuss multiple scales of coarse-graining, from the organism to the molecular level. We will particularly focus on some recent work to understand the statistics and dynamics of two biomolecular systems: Filamentous actin (F-Actin) and the SOD1 protein. We will briefly describe Monte Carlo simulations and analytic predictions identify the critical buckling force on an actin filament, and how molecular dynamics simulations of a C-alpha model of SOD1 identify a critical folding pathway for this protein.



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