



PHYSICS COLLOQUIUM: Undergraduate Engagement as a Unifying Model for Physics Scholarship



Dr. Patricia Soto

**Director Undergrad Research Opportunities Center (UROC)
University of California, Merced**

About The Speaker:

Patricia Soto has served as Director of the Undergraduate Research Opportunities Center (UROC) at the University of California, Merced since January 2025. Prior to joining UC Merced, she was a faculty member in the Department of Physics at Creighton University for 17 years. She completed postdoctoral training at the University of California, Santa Barbara, and earned her PhD at the University of Groningen in the Netherlands. She received both her bachelor's and master's degrees in physics from Universidad de los Andes in Colombia. Patricia is actively engaged in national professional societies. She serves as a founding associate editor for The Biophysicist journal and was a founding member of the Biophysical Society's PUI Network. She is also a Member-at-Large on the Executive Committee of the APS Division of Biological Physics. While at Creighton University, her scholarship was supported by funding from the NSF, NSF EPSCoR, and the National Institutes of Health INBRE program.

Abstract:

This talk showcases a model of academic physics scholarship grounded in undergraduate engagement. Based on my experience at a Primarily Undergraduate Institution in the United States, I will illustrate how research programs in molecular biophysics and physics education are sustainable, productive, and intellectually rigorous when undergraduates are central to the projects. The first set of examples draws from my research in computational molecular biophysics. I will show how my undergraduate research group developed mechanistic insight into prion protein misfolding and conformational conversion. The second set of examples draws from my scholarship in physics education research. These projects examine instructional design strategies that promote sensemaking and physics fluency in introductory physics courses enrolling life sciences students. I will also share an example from an upper-division course to illustrate how these same design principles support advanced physics learning. The examples illustrate a unified model of physics scholarship in which undergraduate research and instructional design function as complementary pathways to enhance the student experience and advance the discipline.

Date:
2/6/2026

Time:
10:30 AM – 11:50 AM

Location:
GRAN 135



**For more information contact: Jay Sharping
jsharping@ucmerced.edu**