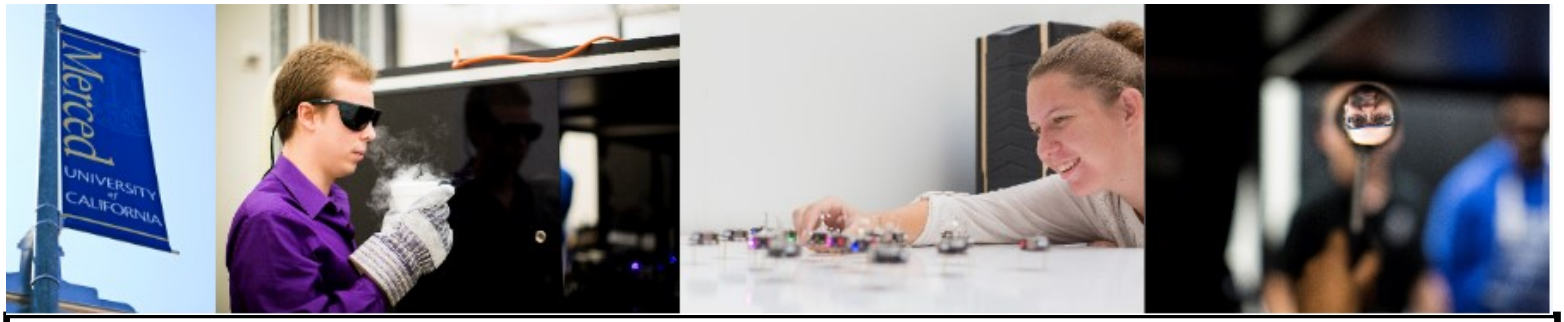

PHYSICS COLLOQUIUM:

From Frozen to Flowing Time

Date: **11/22/19**

Time: **10:30 AM**

Location: **COB2 140**

Srividya Iyer-Biswas

Assistant Professor, Dept. of Physics

Purdue University

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Abstract

In this colloquium I will highlight how a combination of "Precision Biology" and first-principles-based theory can help reveal the emergent simplicities in the stochastic dynamics of individual organisms. In particular, I will discuss quantitative rules governing the emergence of functional phenotypes in individual unicellular organisms (bacteria) subjected to different growth conditions. I will focus on complex organismal phenomena that underlie significant biological functioning of the organism ---phenomena that are simultaneously influenced by multi-scale mechanisms, such as coordinated response of a whole organism to time-varying changes in nutrient conditions.

About the Speaker

Dr. Iyer-Biswas obtained her PhD doing theoretical physics at Ohio State U, and subsequently transitioned into doing experimental biophysics during successive postdocs at Princeton University and UChicago. Sri is currently an assistant professor of Physics at Purdue University, where her group uses high-precision measurements and first-principles-based physics theory to find emergent rules governing the apparently complex stochastic and non-equilibrium dynamics of living systems. Sri has received several awards and honors recognizing her research. She was named a Scialog Fellow for Molecules Come to Life in 2017 and a Showalter Trust Awardee in 2018. In recognition of the innovative and interdisciplinary nature of her research, Sri has been an invited External Professor of the Santa Fe Institute since 2017. Sri is passionate about communicating the excitement of doing science to diverse audiences and was awarded the Outstanding Research Presentation award at the Gordon Research Conference on Stochastic Physics in Biology (2017). Sri is a dedicated educator and has received the Spira Award for Outstanding Undergraduate Physics Teaching (2018).