

# Department of Physics and Astronomy Colloquium Series

**Tuesday, March 24, 2026, 2:30pm in PSE 317**

**Speaker:** Anna O'Grady

**Institution:** Carnegie Mellon University

**Title:** Identifying the first population of Yellow supergiant binaries in the Magellanic Clouds

**Abstract:** Binary evolution theory predicts that the Hertzsprung Gap — the area of the Hertzsprung-Russell diagram occupied primarily by intermediate temperature evolved stars — is home to multiple populations of binary systems with varied evolutionary histories. Recent works have constrained the binary fraction of evolved populations of massive stars in local galaxies such as red supergiants and Wolf-Rayet stars, but the binary fraction of yellow supergiants (YSGs) in the Hertzsprung Gap remains unconstrained. We have developed a method to distinguish single YSGs from binary YSGs using optical and ultraviolet photometry, and have applied this method to identify the first population of candidate YSG binaries in the Magellanic Clouds, finding a preliminary binary fraction of 30-60%. In this talk I'll explain how we developed this method, present the results of our initial search for YSG binaries, show preliminary spectroscopic results, and discuss plans to characterize the properties of these systems, constrain the binary fraction of YSGs in the Clouds, and identify what fraction of the binary population have partially stripped envelopes.