COLLEGE OF
Engineering, Computer Science, and Technology

Seminar in Interdisciplinary STEM Research

April 24th – Thursday, 3:05-4:20 PM PST

Location: E&T C-256

HOSTED BY CREST-CATSUS AND SIKAND SITI CENTERS

Dr. Margaret Lazzarini

Assistant Professor, Department of Physics and Astronomy at California State University, Los Angeles

Margaret Lazzarini is an Assistant Professor in the Department of Physics & Astronomy at Cal State LA. She teaches courses in astronomy and mentors undergraduate and graduate students in astrophysics research. Prior to coming to Cal State LA, she was an NSF Astronomy & Astrophysics Postdoctoral Fellow in the High Energy Astrophysics group at Caltech. She completed her PhD in Astronomy at the University of Washington in 2021. Prior to starting her PhD, she taught high school physics and astronomy in Los Angeles and completed an MA in Urban Education from Loyola Marymount University. She has a BS in Astrophysics from Yale University.

Learning about Massive Binary Stellar Evolution from High Mass X-ray Binaries in Local Group Galaxies

Abstract: Multiwavelength observations of populations of evolved massive stellar binaries are crucial for understanding the complex process of massive binary stellar evolution that can result in binary compact object mergers observable with gravitational waves. High mass X-ray binaries (HMXBs) evolved massive stellar binaries in which the primary star has become a compact object and accretes from a massive secondary star. In this talk I will discuss ongoing work to characterize the population of HMXBs in massive spiral and low mass, dwarf galaxies in the Local Group. Combining deep optical and X-ray observations allows us to characterize each galaxy's HMXB population including measuring X-ray luminosities, physical properties of the secondary stars, and the HMXB age distribution and production rate for each galaxy. These measured population demographics can be used to constrain theoretical binary stellar evolution models. Comparing HMXB populations across galaxies of different masses, star formation rates, and chemical compositions allows us to constrain the impact of these galaxy-scale properties on massive binary stellar evolution.

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