SACRAMENTO STATE

Department of Physics and Astronomy

FALL 2023 Colloquium Series

# “Dangerous Dances of Stars around Supermassive Black Holes”


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Imagine dancing near a colossal black hole! While it might not be by choice, stars at the heart of our Milky Way revolve around a staggering 4-million-solar-mass black hole, completing their orbits in as little as 16 years. It was the relentless effort of Nobel Prize-winning teams over two decades that traced these stellar orbits and meticulously gauged the mass of this black hole. Recent observations have revealed an enigmatic category of sources that exhibit periodic X-ray bursts at the cores of certain remote galaxies. These bursts span durations from mere hours to about a year. In this presentation, I will posit that these X-ray flares emanate from stars closely tethered to supermassive black holes. Under such conditions, Einstein's General Relativity forecasts intricate orbital paths, and variations in these bursts' recurrence times can be pivotal in determining the black hole's mass and rotational speed. However, these celestial dancers only grace the cosmic stage for a brief 100 years before being eaten up.


**Thursday, September 21, 2023**

**4:00 – 5:20PM**

**MND1015**

*Open & Free to all students, faculty and public*