



DEPARTMENT OF PHYSICS AND ASTRONOMY

COLLOQUIUM **IN-PERSON ONLY EVENT**



Standing Out From The Crowd: Finding Supermassive Black Hole Binaries In Gravity & Light

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The Universe is thrumming with gravitational waves. June 2023 brought the first evidence for an all-sky background of nanohertz-frequency gravitational waves, discovered by collaborations including the North American Nanohertz Observatory for Gravitational Waves (NANOGrav) and groups in Europe, Australia, India, and China. This was an endeavor decades in the making, requiring painstakingly precise timing observations of scores of millisecond pulsars across the Milky Way using flagship radio telescopes. While the results from separate groups are consistent with one another—and the leading interpretation of a population of supermassive black-hole binaries as the source—the observations provoke many new questions. Do the results imply a population of binaries more massive than expected? What are the observational milestones as the first individually resolvable binary signals come into focus? Can we link these signals to their host galaxies or electromagnetic counterparts? In this talk, I will chart the path to discovery, reflect on what we have learned since our announcement, and explore the exciting opportunities and synergies ahead—including the role of next-generation radio instruments and space-borne gravitational-wave missions.



Thursday, October 15, 3:00–4:00 PM

IN-PERSON EVENT PHYSICS BUILDING, ROOM 202

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