



Department of Physics and Astronomy
SPRING 2026 Colloquium Series

“Two Telescopes, One Signal: The Cosmological 21cm and High Redshift Galaxies at Cosmic Dawn”

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Sac State Physics & Astronomy

The Epoch of Reionization, when the first stars and galaxies ionized the primordial hydrogen, remains one of the last unexplored frontiers in cosmology. In the coming years, the Hydrogen Epoch of Reionization Array (HERA) in South Africa will map neutral hydrogen through its 21cm emission, while the Nancy Grace Roman Space Telescope (ROMAN) will catalog high-redshift galaxies from space. This talk presents forecasts for detecting the cross-correlation between these two cosmic tracers at $z \sim 8$, roughly 600 million years after the Big Bang. Using end-to-end visibility simulations that capture realistic interferometric effects, we show that a statistically significant detection is achievable, providing an independent verification of 21cm measurements and new insights into how reionization unfolded across the early universe.

Thursday, April 23, 2026

4:00 - 5:20PM

MND1015

Open & Free to all students, faculty and public