

## “Gravitational Wave Astrophysics: Opening the New Frontier”

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The gravitational wave window onto the universe is expected to open in  $\sim 5$  years, when ground-based detectors make the first detections in the high-frequency regime. Gravitational waves are ripples in spacetime produced by the motions of massive objects such as black holes and neutron stars. Since the universe is nearly transparent to gravitational waves, these signals carry direct information about their sources – such as masses, spins, luminosity distances, and orbital parameters – through dense, obscured regions across cosmic time. This talk will explore gravitational waves as cosmic messengers, highlighting key sources, detection methods, and the astrophysical payoffs across the gravitational wave spectrum.