## Multi-messenger Signals and Counterparts to Gravitational Waves

Monday, 5 May 2025 16:15 (30 minutes)

In this talk, I will present the wide range of multi-messenger signals expected from gravitational wave (GW) sources across the frequency bands of all current and future GW detectors. I will begin at high frequency, discussing compact object binary mergers and massive stellar death. I will present some novel results on signatures expected from these latter events, which call into question our current understanding of heavy element production in our universe. I will then discuss the mid-frequency GW range, including potential fast radio bursts from extreme mass ratio inspirals, binary white dwarf mergers, and multi-messenger signatures from intermediate mass black hole binary mergers. We will proceed to the lowest frequency range, discussing supermassive black hole binary mergers and their corresponding counterparts. Finally, we will end with a brief discussion of the implications for future GW detectors and multi-messenger follow-up coordination, and how to optimize the physics we can glean from these extraordinary events.

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