

# **Physics Colloquium**

### Thursday, 22 May 2025 | 17:00 – 18:00, Seminar Room 3<sup>rd</sup> Floor

## **Gravitational Wave Science from Scattering Amplitudes**

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### ABSTRACT

Scattering amplitudes are central objects in a quantum theory, capturing the probability of particular scattering events taking place. Traditionally motivated by collider experiments, such as the Large Hadron Collider at CERN, the study of scattering amplitudes has found a wide range of applications. Notably, these techniques have recently been employed to address astrophysical binary mergers emitting gravitational waves. In this talk, I will discuss how we have used modern amplitudes methods to improve theoretical modeling of binary systems. I will also describe how application of amplitudes methods in this new context has led to the discovery of new phenomena that may manifest in the gravitational waveform.

