Contribution ID: **2** Type: **not specified**

Modeling Late-Time Tails for Scalar Perturbations of Quantum Corrected Black Holes

Tuesday 2 May 2023 14:00 (40 minutes)

The main goal of this research is to obtain a clear and accurate model of the late-time behavior of a quantum-corrected black hole's radiative emission wave. Specifically, the focus is on late-time tail waveforms, which appear after the exponentially damped signal originating from the ring down phase of a perturbed black hole. This project focused on interpreting the effects of loop quantum corrections on black hole quasi-normal modes and radiative tails. We began with the scalar wave equation and solved for the Regge-Wheeler scalar field potential, which captures the physics of a standard Schwarzschild black hole. This solution allowed us to generate waveforms with different initial variables, such as multipole numbers and radial epsilon exponents. Next, we analyzed the divergent characteristics, oscillatory behavior, and decay rates of the late-time tails for the quantum-corrected black hole and performed a comparison with the Schwarzschild case. This research is part of an ongoing project on gravitational wave emission from quantum-corrected black holes, and how they can be modeled. It is a bid to make detection and recognition of such waveforms possible in future gravitational wave observatories.

Author: SHAW, Scott (University of Massachusetts Dartmouth)

Presenter: SHAW, Scott (University of Massachusetts Dartmouth)