

# 4PM Scattering of Spinning Black Holes and Neutron Stars

*Thursday 14 December 2023 17:00 (30 minutes)*

I will discuss our recent calculations of the observables (impulse, spin kick, scattering angle) involved in the scattering of two black holes or neutron stars at fourth post Minkowskian order (three-loop order) using the Worldline Quantum Field Theory (WQFT) framework. These 4PM observables now include both spin-orbit and adiabatic tidal corrections—inclusion of the latter necessitates a renormalization of the underlying classical effective field theory (EFT), with the addition of post-adiabatic counterterms and a corresponding renormalization group flow of the post-adiabatic Love numbers.

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