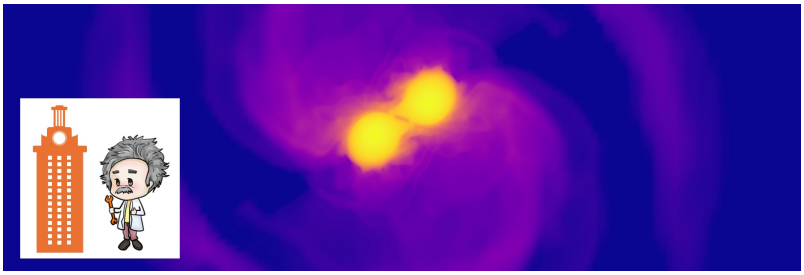

Contribution ID: **23** Type: **not specified**

Performance-Portable Numerical Relativity with AthenaK

Wednesday 11 June 2025 11:30 (1 hour)

In this talk, I present the numerical relativity module developed within AthenaK, an open-source, performance-portable astrophysics code optimized for exascale computing. Driven by the demand for high-accuracy gravitational waveforms and the need to efficiently utilize emerging hardware architectures, AthenaK adopts the Z4c formulation to evolve the Einstein equations. We demonstrate the accuracy of the implementation through a suite of standard tests, including convergence studies of gravitational waveforms from binary black hole mergers. We will also discuss the implementation of Valencia GRMHD, with validation tests including binary neutron star evolutions.

Presenter: ZHU, Hengrui (Princeton University)