

Modeling Luminous Accretion Flows around Black Holes

New general relativistic MHD models of black hole accretion flows in luminous systems (such as quasars and X-ray binaries) that include full radiation transport will be described. These models are designed to study the steady-state structure of the accretion disk near the horizon, and the effect of radiation on the launching of relativistic jets from spinning black holes. Moreover, they enable not only the interpretation of the spectra and variability of these sources, but also predictions about the rate of growth of black holes in the early universe, and measurement of the energy and momentum feedback into the surrounding medium, a process likely to be important in galaxy formation. These calculations use a new version of the Athena++ adaptive mesh refinement code based on the Kokkos library that runs on both CPUs and GPUs. A brief description of this new code, as well as other applications and extensions underway, will also be given.

**Monday, November 4th**

2:30 - 3:30 p.m.

725 Commonwealth Ave | Room 502

James StoneInstitute for Advanced Study
School of Natural Sciences