The Astronomical Society of the Republic of China (Taiwan)

Contribution ID: **147**   Type: **Oral**

Iliad: A GPU-Based General Relativisitc Monte Carlo Radiative Transfer Code in Kerr Spacetime

Saturday, May 17, 2025 5:45 PM (15 minutes)

Modeling the multiwavelength spectra of hot accretion flows around black holes requires incorporating key radiative processes, including synchrotron emission, bremsstrahlung, and inverse Compton scattering, along with general relativistic effects. We present Iliad, a GPU-accelerated Monte Carlo ray tracing code for radiative transfer in Kerr spacetime. Covering frequencies from radio to X-ray, Iliad efficiently computes spectra and images by simulating photon trajectories and interactions with energetic electrons. The code is particularly suited for interpreting ongoing and upcoming mm/sub-mm VLBI observations of supermassive black holes, such as those at the centers of the Milky Way and M87. This tool enables high-fidelity modeling crucial for testing theoretical predictions against horizon scale observations.

Section

High Energy

Primary author: PU, Hung-Yi (National Taiwan Normal University)

Presenter: PU, Hung-Yi (National Taiwan Normal University)

Session Classification: High-energy astrophysics