Physics AT QUEENS COLLEGE

Colloquium Notice

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Do Intermediate Mass Black Holes Exist?

Supermassive black holes are ubiquitous in massive galaxies, and are observed at the earliest epochs of the universe. The process of forming them remains a completely open question, and likely relies on the existence of creating an intermediate mass black hole (IMBH) as an intermediary step. Discovering and characterizing IMBHs is therefore a vital step in understanding overall black hole formation. I will discuss results from several high-resolution cosmological zoom-in simulations focusing on the formation and evolution of IMBHs. Local dwarf galaxies are often hosts of IMBHs, though detecting radiation from these black holes as they accrete is challenging. In addition, about 50% of the IMBHs in dwarfs are not centrally located, but rather are wandering within a few kpc of the galaxy center. The reason for off-center locations is mainly due to galaxy-galaxy mergers, and the black holes remain off-center due to very long dynamical friction timescales. IMBHs may also wander through massive galaxy halos after their hosts are disrupted, occasionally inspiraling and merging with a central supermassive black hole. IMBH mergers, either with each other or with supermassive black holes, are optimal for gravitational wave detection by the LISA mission, which will launch in the mid-2030s and revolutionize black hole astronomy.

Monday
September 28, 2026
Starts at 12:15 PM
Coffee at 12:00 PM
Physics Conference Room, SB B326
This talk is accessible via **Zoom** or use
meeting ID 829 2687 2594 and **passcode 866995** to join