"Plasma injection and jet formation in black holes," by Noemie Globus (NYU/CCA)

Date:
Tuesday, December 10, 2019 - 2:30pm to 3:30pm
Series:
Plasma Seminars

I will discuss plasma injection and jet formation around black holes. First I will focus on jets associated with gamma-ray bursts (GRBs). Two competing jet formation mechanisms have been widely discussed in the literature; magnetic extraction of the spin down power of a Kerr black hole (Blandford-Znajek process), and outflow formation via neutrino annihilation above the horizon. These two processes are commonly treated under idealized conditions: models of BZ jets usually invoke the force-free limit and ignore loading of magnetic field lines, whereas models of jets driven by neutrino annihilation are usually constructed within the pure hydrodynamic limit. In GRBs, however, both processes might be at work; I will show the interplay between them, and discuss the possible nature of the outflow in long and short GRBs. Then I will turn to the supermassive black holes and discuss jet formation and collimation in active galactic nuclei (AGNs), with a particular focus on M87. I will finish by saying few words about cosmic-ray acceleration in both AGN and GRB jets.

Location:
PAB 4-330