BLACK HOLES IN DENSE STAR CLUSTERS
Aspen Center for Physics
2015 Aspen Winter Conference January 17–22, 2015

TITLE: Disks of Black Holes in Galactic Nuclei

SPEAKER: Bence Kocsis (IAS)

Galactic nuclei are the densest environments of stars and compact objects in the Universe. The long term evolution of these systems is governed by collective effects known as resonant relaxation. In this talk I will present the results of numerical simulations following the evolution during resonant relaxation. The orbital directions of stars and black holes segregate in mass, the massive components form disks. We use statistical mechanics to derive the final distribution of orbital directions, and show that the system exhibits phase transitions. Disks of black holes may represent the most important sources of gravitational waves for LIGO, and may have important implications for active galactic nuclei.