



ICTS Astrophysics & Relativity Seminar (HYBRID)

Title : Critical Phenomena in Gravitational Collapse

Speaker : Thomas Baumgarte (Bowdoin College, US)

Date : Wednesday, 25th July 2023

Time : 03:30 PM (IST)

Abstract : Critical Phenomena, including the appearance of universal scaling laws and critical exponents in the vicinity of phase transitions, appear in different fields of physics and beyond. Critical phenomena in gravitational collapse to black holes were first observed by Matt Choptuik 30 years ago - a seminal discovery that launched an entire new field of research. While these phenomena are well understood in spherical symmetry, critical collapse of gravitational waves has remained elusive. In this talk I will review the appearance of scaling laws and self-similarity close to the onset of black hole formation, and will then present simulations of gravitational-wave collapse with three independent numerical codes. These results strongly suggest that the threshold solution for vacuum collapse is not universal, and that our understanding of critical collapse in the absence of spherical symmetry will have to be broadened.

Venue : **Offline:** Chern Lecture Hall (ICTS)

Online: Please click the below link to join the seminar.

<https://icts-res-in.zoom.us/j/81955438593?pwd=bmUreUI0ZEk2dkIwRk85L2dRNU1wZz09>

Meeting ID: 819 5543 8593

Passcode: 262627