ICTS PhD Synopsis Seminar

Title : Black holes and holography

Speaker : Pushkal Shrivastava, ICTS-TIFR, Bangalore

Date : Tuesday, July 28, 2020

Time : 02:30 PM

Venue : Online seminar (Please use this link to join the seminar - https://guest.lifesize.com/1126104 Google chrome is preferred)

Abstract : Semiclassical gravity offers deep insights into the working of the complete theory of quantum gravity. We will analyse the low energy structure of gravity in 4-d asymptotically flat spacetimes and argue that all information is stored holographically. This breakdown of locality has immediate implications for the black hole information paradox.

The fuzzball proposal to the information paradox suggests that typical black hole microstates do not have a horizon. We will discuss some statistical-mechanical challenges faced by this proposal and argue why classical fuzzball geometries cannot parameterize the space of black hole microstates.

Classical general relativity admits solutions, such as charged/rotating black holes, where initial conditions cannot specify the evolution of fields everywhere, uniquely. Strong cosmic censorship conjecture suggests that such solutions should be unstable under generic perturbations. We develop a quantum necessary condition for violation of the conjecture. This condition is strong enough to rule out violations in charged black holes in AdS for d>3.