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Department of
Theoretical Physics

Tata-Infosys Lecture Series

Recent developments in strong cosmic censorship

Harvey Reall
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Date / Time / Venue

18 Sep 2019, 10:00 AM
A-304

19 Sep 2019, 11:30 AM
AG-66

20 Sep 2019, 10:00 AM
A-304

In most branches of fundamental physics, if one knows the initial state of a system exactly then one can predict its future state exactly. But in General Relativity this statement appears to be violated by charged or rotating black holes. These possess inner horizons beyond which spacetime is not predictable from initial data describing the universe before the black hole formed. The strong cosmic censorship conjecture asserts that this behaviour is always unstable, and thereby rescues determinism. There is plenty of evidence that the conjecture is true for asymptotically flat black holes. However, recent work has found that the conjecture may be violated by certain black holes with a non-zero cosmological constant, specifically near-extremal charged de Sitter black holes in 3+1 dimensions, and the BTZ black hole in 2+1 dimensions. My lectures will review the recent work on this topic. (References - arxiv:1808.02895, 1906.08265)