

Geometry and Topology Seminar

Hari Kunduri, Memorial University

Monday, December 2nd, 2013

2:00 pm, HH 3017 @ 2 p.m.

The first law of soliton and black hole mechanics

Abstract:

Black holes in string theory are typically characterized by their mass, spin, and various charges carried by Abelian fields (non-trivial closed 2 forms). Remarkably, variations of these quantities satisfy precise relations in analogy with the first law of thermodynamics. Solitons are smooth, asymptotically flat horizonless geometries whose existence is closely related to non-trivial spacetime topology. While they are effectively ruled out in four dimensions, but in higher dimensions there is now a rich family of such solutions. We will discuss recent work (arXiv:1310.4810 [hep-th]) where we obtained a generalized 'first law' which takes into account contributions from solitons.