Geometry Seminar

Speaker:

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Monday, March 12, 2018
1:00 p.m., HH-3013

Uniqueness theorems for static solutions of the Einstein-Maxwell system

Abstract:

In general relativity, isolated gravitating systems are described by asymptotically flat geometries (roughly the geometry is diffeomorphic to R^n / Ball with a Euclidean metric outside a compact region). A static spacetime is one that is `time independent' in a precise sense (admits a timelike isometry) such that there are spatial hypesurfaces orthogonal to the orbits of isometry. I will discuss the proof that any asymptotically flat static spacetime in Einstein-Maxwell theory (in dimensions n >4) must have no magnetic field. This completes the classification of static non-extremal black holes in this theory. In particular, these results establish that there are no asymptotically flat static spacetimes with non-trivial topology, with or without a black hole, in Einstein-Maxwell theory.