



PIMS / AMI Seminar



Friday, October 25, 2013
3:00 p.m.
CAB 657

“The Einstein constraint equations on compact manifolds with boundary”

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Abstract

In this talk I will present some recent results on the conformal formulations of the Einstein constraint equations on compact manifolds with boundary. This is an important problem in general relativity, and it is particularly important in numerical relativity, as it arises in models of Cauchy surfaces containing asymptotically flat ends and/or trapped surfaces. Moreover, a number of technical obstacles that appear when developing the solution theory for open, asymptotically Euclidean or hyperbolic manifolds have analogues on compact manifolds with boundary. Under reasonable assumptions on the data we prove existence of solutions for a class of Robin boundary conditions commonly used in the literature for modeling black holes. The focus is on low regularity data and on the interaction between different types of boundary conditions, which has not been carefully analyzed before. As a supporting technical tool, which may have independent interest, we generalize the Yamabe classification to nonsmooth metrics on compact manifolds with boundary.

This is a joint work with Michael Holst and Caleb Meier.

Refreshments will be served in CAB 649 at 2:30 p.m.