
ARGAM OHANYAN, University of Toronto

On the geometry of continuously differentiable spacetime metrics

Nonsmooth metrics appear naturally in mathematical relativity and spacetime geometry, whether as solutions of Einstein's equations or during the course of physically relevant operations such as spacetime matching. It is important to study their geometry also to give further physical credence to the singularity theorems of Hawking and Penrose. In this talk, we will discuss the class of continuously differentiable spacetime metrics, for which many important theorems have been established recently. After introducing the main approximation tools and methods of study, we will discuss important applications such as the Hawking and Penrose singularity theorems, the Hawking-Penrose singularity theorem, and the splitting theorem.

This talk is partly based on joint collaborations with Kunzinger, Schinnerl, Steinbauer and with Braun, Gigli, McCann, Sämman.