



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

COLLOQUIUM

Philippe LeFloch
(University of Paris VI and CNRS)

"Einstein spacetimes with low regularity"

Abstract:

After presenting the fundamentals of mathematical general relativity and the Einstein equations, I will discuss recent results on spacetimes with low regularity, when no assumptions on the derivatives of the curvature tensor are made. This is an issue of central interest when dealing with the Einstein equations. Under geometric bounds on the curvature and injectivity radius, only, there exist local foliations by CMC (constant mean curvature) hypersurfaces, as well as CMC--harmonic coordinates. Importantly, these coordinates are defined in geodesic balls whose radii depend on the assumed bounds, only, and the components of the Lorentzian metric have the best possible regularity. Several classical techniques from Riemannian geometry are adapted here to Lorentzian geometry (Jacobi field estimates, comparison theorems, elliptic estimates).

Wednesday, April 13th, 2011

Surge 284

4:10-5:00pm

Tea Time at 3:40pm