

DIFFERENTIAL GEOMETRY/PDE SEMINAR

WEDNESDAY, JANUARY 5, 2005

PADELFORD C-36

3:50 PM

Rough Solutions of the Einstein Constraint Equations on Compact Manifolds

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The Einstein constraint equations arise as a compatibility condition on initial data for the Cauchy problem of general relativity. Recent advances in the low regularity theory of the Cauchy problem have lead to an interest in constructing rough solutions of the constraint equations. On compact manifolds the lowest regularity obtained to date is H^2 , whereas on asymptotically Euclidean manifolds solutions with metrics in $H^{3/2+\epsilon}$ have been constructed. In this talk I will show that the level of regularity on compact manifolds can be lowered to $H^{3/2+\epsilon}$. In particular, the constant mean curvature (CMC) conformal method provides a complete parameterization of all rough CMC solutions. I'll also show how the need to work with minimal regularity hypotheses leads to a simplification of previous arguments used to construct smooth solutions.

For more information about this seminar, visit the DG/PDE Seminar Web page (from the Math Department home page, www.math.washington.edu, follow the link **Seminars, Colloquia, and Conferences**).

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