DIFFERENTIAL GEOMETRY/PDE SEMINAR

Wednesday, July 17, 2002
Smith 107
3:45 pm

Electromagnetism, ellipticity and conformal Hodge theory

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On a Riemannian signature manifold the Maxwell equations are elliptically deficient. This can be cured by adding extra equations to the system—so called gauge fixing equations. The celebrated Coulomb gauge is an example. However with this and with most other choices the extended system fails to be conformally invariant even though the Maxwell equations are. In fact there is an elliptic extension of the Maxwell system that is well defined on conformal 4-manifolds. Under mild restrictions, the conformally invariant null space of this operator is isomorphic to the first de Rham cohomology. Ideas from Lie representation theory show how to extend this conformally invariant de Rham Hodge theory to other dimensions and also to related BGG resolutions such as the (conformal) metric deformation complex.

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**).