DIFFERENTIAL GEOMETRY/PDE SEMINAR

Wednesday, October 26, 2005
Padelford C-36
3:50-5pm

Combining finite elements and geometric wave propagation in 1-D

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We consider the initial value problem for a strictly hyperbolic partial differential equation on the circle. We transform the equation to an operator valued ODE $du/dt = R(t)u$, where $R(t)$ is bounded. The transformation involves applying differential operators, solving an elliptic differential equation, and applying a coordinate transformation involving the characteristics, which can be done at cost $O(N)$. The resulting ODE is solved using a multiscale time-stepping method, which results in an algorithm with complexity $O(N)$ for the original hyperbolic equation.

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**).