

## DIFFERENTIAL GEOMETRY/PDE SEMINAR

WEDNESDAY, OCTOBER 26, 2005

PADEL FORD 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](http://www.math.washington.edu), follow the link **Seminars, Colloquia, and Conferences**).

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