

University of Notre Dame Department of Mathematics

# **PDE, COMPLEX ANALYSIS AND DIFFERENTIAL GEOMETRY SEMINAR**

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University of Notre Dame

*Will give a lecture entitled:*

## **Runge-Kutta Discontinuous Galerkin Method with Conservation Constraints to improve CFL Condition for Solving Conservation**

*On*

Tuesday, February 1, 2011

*At*

11:00 AM

*In*

258 Hurley Hall

### ***Abstract***

In this talk, I will discuss a new formulation of the Runge-Kutta discontinuous Galerkin method for solving conservation laws. The new formulation requires the computed RKDG solution in a cell to satisfy additional conservation constraint in adjacent cells and does not increase the complexity or change the compactness of the RKDG method. We find that: 1) this new formulation improves the CFL number over the original RKDG formulation and thus reduces the overall complexity; 2) the new formulation improves the robustness of the DG scheme with the hierarchical reconstruction (HR) limiting strategy and improves the resolution of the numerical solutions in multi-dimensions.

I will also give a short discussion on the recent development of the HR method for reconstructing DG and finite volume solutions.