TEMPLE UNIVERSITY
Department of Mathematics

Applied Mathematics and Scientific Computing Seminar

Room 617 Wachman Hall

Wednesday, 6 April 2011, 4:00 p.m.
(tea at 3:45)

On the coupling of Finite Volume method with Discontinuous Galerkin method

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Abstract.

Finite volume methods have been widely used to solve partial differential equations. However for some applications there is the need for high resolution on complex geometries. The discontinuous Galerkin method can be used to address the need for high resolution but it is a very expensive method. We consider the coupling of cell-centered finite volume method with the primal Discontinuous Galerkin methods for elliptic problems. The idea is to use the discontinuous Galerkin method on the parts of the domain where it is needed and the finite volume method on the rest of the domain. I will show convergence of the resulting method and verify theoretical convergence rates using numerical test cases. Advantages of the coupled scheme will also be shown for problems with discontinuous coefficients or anisotropic diffusion.