

Department of Mathematics

University of Houston

## Scientific Computing Seminar

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### Parametrized maximum principle flux limiters for high order schemes solving hyperbolic conservation laws

Thursday, Nov. 29, 2012

3:00 PM- 4:00 PM

Room 646 PGH

**Abstract:**

Maximum principle preserving is an important property of the entropy solution, the physically relevant solution, to the scalar hyperbolic conservation laws. One would like to imitate the property on the numerical level. On the other hand, preserving the maximum principle also provides a stability to the numerical schemes for solving the conservation law problem. The challenge exists when solving the conservation law problems with high order schemes in a consistent and conservative framework. In this talk, we will discuss how this problem is addressed by introducing a series of maximum principle constraint. By decoupling those constraints, a parametrized flux limiting technique is developed to make sure the numerical solution preserves maximum principle in the conservative and consistent manner while the scheme is still high order. Generalization of the technique to convection-diffusion problem will also be discussed. Potential application of this method will be explored in the future work.

This seminar is easily accessible to persons with disabilities. For more information or for assistance, please contact the Mathematics Department at 743-3500.