

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Dinshaw S. Balsara**

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报告题目:

**HLLI Universal Riemann Solver for
Conservative and Non-Conservative
Hyperbolic Systems and its
Multidimensional Extensions**

邀请人: 袁礼 研究员

报告时间: 2017 年 7 月 11 日 (周二)

上午 10:00-11:00

报告地点: 数学院南楼七层

714 教室

Abstract:

In recent years we have seen a considerable need to accurately simulate all different types of hyperbolic systems. Usually, one wishes to use higher order Godunov methods for the solution of these systems. While many very useful hyperbolic systems can be cast in strictly conservation form, several very important hyperbolic systems have non-conservative products. Therefore, we need to have an efficient one-dimensional Riemann solver that can treat conservative as well as non-conservative hyperbolic systems within the same framework.

In the first half of this talk I present a simple, highly efficient Riemann solver that operates on conservative as well as non-conservative hyperbolic systems. In the second half of this talk I extend the 1D HLLI Riemann solver to multidimensions. HLLI can resolve intermediate waves well. The Riemann solvers have been documented in the literature by Dumbser and Balsara (2016) JCP and Balsara and Nkonga (2017) JCP. This work is also described briefly in Appendix C on the author's website: <http://www.nd.edu/~dbalsara/Numerical-PDE-Course>.

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