Some Contributions of Gui-Qiang G. Chen to Nonlinear Conservation Laws and Partial Differential Equations

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Special Issue in Honor of Professor Gui-Qiang G. Chen on the Occasion of His 60th Birthday

Abstract. This special issue and the two follow-up issues are dedicated to Professor Gui-Qiang G. Chen on the occasion of his 60th birthday. Professor Gui-Qiang G. Chen is internationally recognized as a leader in the analysis of partial differential equations (PDEs) and related disciplines in mathematics and science. He has made wide-ranging contributions, both original and significant, to an array of research areas in mathematical analysis, partial differential equations, mathematical physics, nonlinear science, and other disciplines, especially in the areas of nonlinear hyperbolic systems of conservation laws and the mathematical theory of shock waves, free boundary problems in the theory of supersonic and transonic flow, nonlinear degenerate and mixed-type PDEs and their applications, entropy analysis and weak convergence methods, singular limit problems for nonlinear PDEs, measure-theoretical analysis for discontinuous and singular entropy solutions, stability/instability analysis of

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characteristic discontinuities for nonlinear hyperbolic conservation laws, and convergence/stability analysis of shock-capturing methods and related numerical methods, among others.

Key words: Gui-Qiang G. Chen, nonlinear hyperbolic conservation laws, shock waves, free boundary problems, nonlinear degenerate and mixed-type PDEs, discontinuous and singular entropy solutions, characteristic discontinuities, entropy analysis and weak convergence methods, divergence-measure fields.

1   Biographic remarks

Professor Gui-Qiang G. Chen was born in Cixi City (Ningbo), Zhejiang Province, China, in 1963. He received his BSc from Fudan University in 1982 and a PhD from the Chinese Academy of Sciences in 1987 under the supervision of Professor Xiaxi Ding, and was a postdoctoral fellow at the Courant Institute of Mathematical Sciences at New York University from 1987-89 under the direction of Professor Peter D. Lax. He was appointed as Assistant Professor of Mathematics at the University of Chicago in 1989, Associate Professor of Mathematics at Northwestern