國立中正大學數學系
暨應用數學碩士班、統計科學碩士班
學　術　演　講

Global Classical Solutions for Non-isentropic Gas in the Nozzle Flows

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Abstract

In this talk, we investigate the global existence of classical solutions for non-isentropic gas flows through a duct. This problem can be described as an initial-boundary value problem for the full compressible Euler equations with the geometric source in Lagrangian coordinates, which can be viewed as a hyperbolic system of balance laws when the Riemann invariants are applied. We prove the global existence theorem for classical solutions under appropriate conditions on entropies, ducts, and initial and boundary data. This leads to an essential identity related to the entropy and cross-sectional area of the duct. Our analysis mainly depends on the local existence theorem and uniform a priori estimates, which can be obtained by using the method of characteristics and introducing generalized Lax transformations. Furthermore, the long-time behavior of global classical solutions along all characteristic curves and vertical lines is also determined completely.

This is joint work with Shih-Wei Chou, John M. Hong, and Shih-Ming Wang.

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地　點：本校數學館 527 教室（嘉義縣民雄鄉大學路 168 號）

茶　會：15:30~16:00 數學館三樓 409 室舉行

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