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**John Meng-Kai Hong\*** (jhong@math.ncu.edu.tw), Department of Mathematics, National Central University, Chung-Li, 32054, Taiwan. *Sub-to-super transonic steady states and their linear stabilities for gas flows.*

In this talk we consider the stability of sub-to-super transonic steady states of a one-dimensional model of isentropic compressible flows through a nozzle of varying area with or without viscosity. These sub-to-super transonic steady states are newly found by using the geometric singular perturbation theory. We show that the sub-to-super steady states are physically relevant in the sense that they are linear stable as long as their velocities are great than  $1/\sqrt{2}$  of the sound speed. (Received August 31, 2009)