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# Global existence of weak shocks past a solid ramp

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## Abstract

Prandtl (1936) first employed the shock polar analysis to show that, when a steady supersonic flow impinges a solid wedge whose angle is less than a critical angle (i.e., the detachment angle), there are two possible configurations: the weak shock solution and the strong shock solution, and conjectured that the weak shock solution is physically admissible. The fundamental issue of whether one or both of the strong and the weak shocks are physically admissible has been vigorously debated over several decades and has not yet been settled in a definite manner. In this talk, I address this longstanding open issue and present recent analysis to establish the stability theorem for steady weak shock solutions as the long-time asymptotics of unsteady flows for all the physical parameters up to the detachment angle for potential flow. This talk is based on collaboration with Gui-Qiang G. Chen (Univ. of Oxford) and Mikhail Feldman(UW-Madison ).

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