Kuang, Jie; Zhang, Yongqian
Low Mach number limit for quasi-one-dimensional isentropic Euler flow. (Chinese. English summary) Zbl 07494986

Summary: This paper is devoted to studying the low Mach number limit for the quasi-one-dimensional isentropic Euler equations in $BV \cap L^1$ space. Under assumptions that the total variation of the cross section of the nozzle is sufficiently small and the initial value is away from vacuum, by using the $L^1$-stability estimates and the method of the standard Riemann semigroup, we rigorously prove that the solution can be expanded in the powers of small Mach number and that its coefficients satisfy a linear acoustic equation with the source term.

MSC:
35Q31 Euler equations
35D30 Weak solutions to PDEs
76J20 Supersonic flows

Keywords:
quasi-one-dimensional isentropic Euler flow; low Mach number limit; weak solutions; standard Riemann semigroup

Full Text: DOI