

Existence of positive solutions and hydrodynamic limit of the steady Boltzmann equation with in-flow boundary condition

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Abstract

This work is devoted to the study of existence of positive solutions and hydrodynamic limit of the steady Boltzmann equation with in-flow boundary condition. The proof is based on a L₆-L₁ framework developed by [10] and a refined positivity-preserving scheme in deriving positivity of solutions with in-flow boundary condition and external force. The incompressible Navier–Stokes–Fourier limit with Dirichlet boundary condition is justified for in-flow boundary data as small perturbation of a global Maxwellian.

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