Relaxed Burnett Euqations for Rafefied Gas Dynamics

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Abstract

With M. Slemrod we introduced a relaxation approximation to the Burnett equations, which eliminated the instability paradox of the Burnett equations and satisfy a globally defined entropy condition. This new system offers an attractive numerical method which allows one to approximate the solution of the Boltzmann equations with an accuracy better than the Navier-Stokes equations, and our numerical results, together with L. Pareschi, showed improved numerical shock profile than the Navier-Stokes equations and the Grad equations for different Mach numbers.