

Fluid Approximations from Boltzmann Equations for Domains with Boundary
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We consider Boltzmann and linearized Boltzmann equations over spatial domains with boundary and various types of boundary conditions. Fluid dynamical approximations to the solutions of these equations can be constructed for regimes in which the Knudsen number is small. We describe ways to justify these approximations. The acoustic limit can be justified for DiPerna-Lions-Mischler solutions without constructing a boundary layer. Navier-Stokes approximations require constructing a boundary layer, whereby Navier-type boundary conditions are obtained. This construction is carried out for the linearized Boltzmann equation.