

Boundary singularity of moments for the linearized Boltzmann equation

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Abstract

We study the boundary singularity for stationary solutions of the linearized Boltzmann equation with hard-sphere potential. An asymptotic estimate for the gradient of the moments is established, which shows the logarithmic singularity near the boundary. Our formula holds for the solutions of the Milne and Kramers problems obtained by Bardos-Caffisch-Nicolaenko, 1986. Our theorem requires the Hölder continuity of the boundary data. In particular, it applies to the complete condensation problem for half space.