RELAXATION OF SPATIALLY UNIFORM DISTRIBUTION FUNCTION IN THE CASE OF NON-UNIFORM ENERGY DISTRIBUTION

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S u m m a r y

Relaxation processes in a model system are studied with the use of a kinetic equation. In a first approximation with respect to the concentration, an expression for the temperature as a function of the time has been derived in the spatially uniform case and for the Maxwell distribution function with a non-uniform energy distribution over the rotational and translational degrees of freedom. The relaxation time is shown to decrease, as the difference between the initial and equilibrium values of average translational kinetic energy diminishes and the equilibrium temperature grows. The time of the average translational (rotational) energy relaxation to the equilibrium value is found to be reciprocal to the square root of the equilibrium temperature and to the particle concentration. For the intrinsic moment of inertia, which is equal to the moment of inertia of a spherical particle with certain effective radius, the relaxation time is minimal. Relaxation times for some parameters of particles in the system concerned are calculated.