

Erratum: Quasihydrodynamic behavior of linear atomic collision cascades [Sov. Phys. JETP 65, 1252 (1987)]

I. B. Levinson and D. L. Maslov

We presented¹ a self-similar solution of a kinetic equation for a linear cascade of atomic collisions with a power-law interaction potential; this solution is valid for times in which the number of particles in the cascade is large enough. We found an error in the analysis of the case of soft potentials ($n < 4$), where there is in fact no self-similar solution satisfying the energy conservation law.

To clarify the situation, we considered a simpler model which turned out to yield an exact solution of the kinetic equation, by using the hard-sphere approximation for power-law potentials. Details of the solution of the kinetic equation in this approximation can be found in Ref. 2. For hard potentials ($n > 4$) the obtained exact solution actually takes a self-similar form under the conditions of Ref. 1. For soft

potentials, the exact solution, under the same conditions, approaches not a self-similar asymptote but a stationary limit corresponding to an assembly of particles with zero energy. The time to reach this limit must in fact be understood as the cascade duration which, in accordance with the genealogy in Ref. 1, should be finite in this case.

AIP note: Text of this erratum was submitted by mail.

¹I. B. Levinson and D. L. Maslov, Sov. Phys. JETP 65, 1252 (1987).

²D. L. Maslov, Exact and Self-Similar Solutions of a Kinetic Equation for a Cascade Process, Preprint, Inst. of Probl. Microelectr. Technology, Chernogolovka, 1989.

Translated by J. G. Adashko