Nonlinear Sciences > Chaotic Dynamics

On statistics of molecular chaos

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It is shown that the BBGKY equations for a particle interacting with ideal gas imply exact relations between probability distribution of path of the particle, its derivatives in respect to the gas density and irreducible many-particle correlations of gas atoms with the path. These relations visualize that the correlations of any order always significantly contribute to evolution of the path distribution, so that the exact statistical mechanics theory does not reduce to the classical kinetics even in the low-density (or Boltzmann-Grad) limit.

Comments:	3 pages, no figures, latex epl2, rejected by EPL because one of two reviewers cannot derive Eq.6 from Eq.4 while another thinks that "the hard sphere BBGKY hierarchy is correct in the limit of hard sphere collisions" and "statistical correlations at low density they have little influence" (ha?)
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