The Fokker-Planck equation for an isolated N- particle system
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It is known that the Fokker-Planck equation with constant coefficients of diffusion and linear friction describes the ensemble of the stochastic evolutions in velocity space of a Brownian test particle immersed in a heat bath of fixed temperature. The same partial differential equation, but now with constant coefficients which are functionals of the solution describes the kinetic evolution of an isolated N-particle system with certain stochastic interactions.

Key Words: Fokker-Planck equation, diffusion equation on a high-dimensional sphere, kinetic theory, Kac program, propagation chaos.