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Microstructure of a Dilute Sedimenting Suspension

Bogdan Cichocki, **Krzysztof Sadlej**

Warsaw University, Warsaw, Poland

The slow sedimentation of a dilute disordered non-Brownian suspension in a viscous,incompressible fluid described by the Stokes equation is studied. Starting from the Liouville equation, we derive the BBGKY (Bogolubov–Born–Green–Kirkwood–Yvon) hierarchy of equations for particles interacting via long range hydrodynamic interactions. This hierarchy determines the time evolution of the reduced distribution functions. Assuming next low particle concentration we determine the particle distribution which for stationary state assures finite correlations despite multi-particle hydrodynamic interactions. Results are discussed.

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