

Dynamics of a Large System of Heavy Particles in a Newtonian Fluid

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Abstract

We consider the motion of a large number of heavy particles in a Newtonian fluid occupying a bounded spatial domain. When we say “heavy”, we mean a particle with a mass density that approaches infinity at an appropriate rate as its radius vanishes. We show that the collective effect of heavy particles on the fluid motion is similar to the Brinkman perturbation of the Navier–Stokes system identified in the homogenization process.