Clusters of particles settling under gravity in a viscous fluid

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We investigate clusters made of a small number of particles settling under gravity in a viscous fluid. The particles do not touch each other and can move relative to each other. A family of clusters is found with periodic oscillations of all the settling particles. The dynamics is analysed in the point-particle approximation. The results are used to explain how a spherical cloud, made of a large number of particles distributed at random, evolves and destabilizes.

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