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Relative acceleration of particle pairs in flows past random arrays of spheres MADHUSUDAN G. PAI, RAHUL GARG, SHANKAR SUBRAMANIAM, Department of Mechanical Engineering, Iowa State University, Ames, IA-50010 — Hydrodynamically-induced particle clustering is observed in inertial suspensions of particle-laden flows. Second-order statistics like the pair correlation function are used to quantify the effect of clustering. The evolution equation for the second-order density contains a transport term involving the relative acceleration of a particle pair. In this study, we perform direct numerical simulations of flow over stationary spheres and study the effect of particle spacing on the relative acceleration of a particle pair. Understanding effects of acceleration contributions from neighboring particles is a first step towards identifying the mechanisms that contribute to the clustering phenomenon in such systems.

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