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Simulation of particle motion at interface YOUNG JOON CHOI, PATRICK ANDERSON, Eindhoven University of Technology — A diffuse interface model is presented to describe the motion and interaction of particles in two-phase flows. In the diffuse interface model, the interface is considered to have a small but finite thickness, which circumvents explicit tracking of the interface. For the direct numerical simulation of the particle motion, we incorporate an extended finite element method, in which the particle domain is decoupled from the fluid domain while using a regular mesh for the whole computational domain. By combining the diffuse interface method and the extended finite element method, the particle motion at an interface can be simulated on a fixed Eulerian mesh without any need of re-meshing. We apply a small disturbance on a particle resting at an interface between two fluids, and study the particle movement towards its equilibrium position. In particular, we investigate the effect of surface tension, interfacial thickness and particle size on the time required to reach its equilibrium position.

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