

Abstract Submitted
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Influence of Dissipative Particle Dynamics parameters and wall models on planar micro-channel flows¹ YUYI WANG, JIANGWEI SHE, ZHEWEI ZHOU, Shanghai University, MICROFLOW GROUP TEAM — Dissipative Particle Dynamics (DPD) is a very effective approach in simulating mesoscale hydrodynamics. The influence of solid boundaries and DPD parameters are typically very strong in DPD simulations. The present work studies a micro-channel Poiseuille flow. Taking the neutron scattering experiment and molecular dynamics simulation result as bench mark, the DPD results of density distribution and velocity profile are systematically studied. The influence of different levels of coarse-graining, the number densities of wall and fluid, conservative force coefficients, random and dissipative force coefficients, different wall model and reflective boundary conditions are discussed. Some mechanisms behind such influences are discussed and the artifacts in the simulation are identified with the bench mark.

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