NEW INFLOW/OUTFLOW BOUNDARY CONDITIONS
FOR PARTICLE-BASED MODELING OF SUSPENSION
FLOWS IN NETWORKS

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Suspension flows in networks with complex geometry are ubiquitous in nature. Due to complexity of modeling suspension by using continuous models, particle based methods are gaining popularity. In networks with multiple inlets and outlets, the inflow and outflow boundary conditions are necessary to carry numerical simulations. In particular, new particles must be created at the inflows and accurately deleted at the outflows. We developed a new method to impose inflow and outflow boundary conditions, which allows simulations of suspensions of rigid and deformable particles in networks with arbitrary geometry. We present the application of the method to simulations of the dense suspension of red blood cells in parts of the microvascular network. Dissipative Particle Dynamics (DPD) method is used for discretizing the flow.