**Lattice-Boltzmann method for Stokes flow of Deformable Particles** JINGSHU WU, Georgia Institute of Technology, E-JIANG DING, CYRUS AIDUN, G. W. Woodruff School of Mechanical Engineering at Georgia Institute of Technology Atlanta, GA 30032, GEORGIA TECH COLLABORATION — Predicting the rheology of deformable particles suspended in viscous fluid is important in industrial and biological transport applications. We combine a Stokes lattice-Boltzmann Model (SLBM) and Lattice Spring Model (LSM) to capture the dynamics of particles with deformable membrane with enclosed fluid. We simulate blood flow in a small vessel which has deformable arterial wall and red blood cell (RBC) membrane. We find that the flow is affected by the physical properties of wall, membrane and enclosed fluid and these are very important in the hemodynamic applications. The combination of SLBM-LSM can calculate the mesoscale blood flow close to the endothelial surface layer (ESL) or its subset, the glycocalyx layer. And it is also a strong tool to capture the multiphase flow with large number of deformable particles.

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