

Lattice Boltzmann for colloid hydrodynamics

M. Cates¹, R. Adhikari, J.C. Desplat, K. Stratford, I. Pagonabarraga, P. Stansell, A. Wagner

¹*School of Physics, University of Edinburgh, United Kingdom*

mec@ph.ed.ac.uk

Diffusion in dense colloids involves a strong interplay of many-body hydrodynamic forces and thermal noise. Most simulation techniques are good at only one or the other. In particular, the lattice Boltzmann (LB) algorithm is efficient for hydrodynamics, but attempts to include noise have been plagued by inconsistency and poor equilibration. We have recently proposed a consistent, well-founded way to introduce noise in LB, and preliminary results will be presented. Another development of LB, for describing colloids in biphasic solvents, will also be discussed.