Abstract Submitted
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Fluctuating force-coupling method for simulating Brownian suspensions ERIC KEAVENY, Imperial College London — Brownian motion plays an important role in the dynamics of colloidal suspensions. It affects suspension rheological properties, influences the self-assembly of structures, and regulates particle transport. While including Brownian motion in simulations is necessary to reproduce and study these effects, it is computationally intensive due to the configuration dependent statistics of the particles' random motion. I will discuss recent work that speeds up this calculation for the force-coupling method (FCM), a regularized multipole approach to simulating suspensions at large-scale. I will show that by forcing the surrounding fluid with a configuration independent, white-noise stress, fluctuating FCM yields the correct particle random motion, even when higher-order terms, such as the stresslets, are included in the multipole expansion. I will present results from several simulations demonstrating the effectiveness of this approach and also discuss the extension of fluctuating FCM to dense suspension simulations.

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