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Volume effect for particles transported in highly viscous fluids LONGHUA ZHAO, Case Western Reserve University — For various shapes and sizes, particles are treated differently in the fluid system. The level complexity of models needs to be determined to capture the sufficient physical phenomena and such a decisions is based on the assessment of the volume effect. This study is to measure the effect of a non-zero volume spherical particle transported in highly viscous flows. Utilizing the regularized Stokeslet method, particles are studied in three different approaches: a passive fluid tracer at the center of the particle, a sphere with Faxén's correction, and a detailed non-zero volume particle. We compare the discrepancies in velocity field, Lagrangian trajectory and force exerted on the particle with three approaches and provide qualitative information for future studies.

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