A Second Order Temporal Integrator for Brownian Dynamics of Rigid Bodies[1] BRENNAN SPRINKLE, Northwestern University, FLORENCIO USABIAGA, New York University, NEELESH PATANKAR, Northwestern University, ALEKSANDER DONEV, New York University — Simulating Brownian motion of passive or active rigid bodies, with arbitrary shape, suspended in a viscous solvent is examined. Existing numerical techniques which capture the correct stochastic drift term require the solution of two saddle point problems per time step and only achieve first order accuracy deterministically. The saddle point systems are required to enforce the rigidity constraint and can be quite expensive to solve, for a large number of rigid bodies. We propose a novel method which requires the solution of two saddle point problems per time step but achieves second order accuracy in time.

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