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**Active microrheology of Brownian suspensions via Accelerated Stokesian Dynamics simulations** HENRY CHU, YU SU, Cornell University, KEVIN GU, Stanford University, NICHOLAS HOH, ROSEANNA ZIA, Cornell University — The non-equilibrium rheological response of colloidal suspensions is studied via active microrheology utilizing Accelerated Stokesian Dynamics simulations. In our recent work, we derived the theory for micro-diffusivity and suspension stress in dilute suspensions of hydrodynamically interacting colloids. This work revealed that force-induced diffusion is anisotropic, with qualitative differences between diffusion along the line of the external force and that transverse to it, and connected these effects to the role of hydrodynamic, interparticle, and Brownian forces. This work also revealed that these forces play a similar qualitative role in the anisotropy of the stress and in the evolution of the non-equilibrium osmotic pressure. Here, we show that theoretical predictions hold for suspensions ranging from dilute to near maximum packing, and for a range of flow strengths from near-equilibrium to the pure-hydrodynamic limit.

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