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Measuring the osmotic pressure of active colloids MICHAEL WANG, New York Univ NYU, VISHAL SONI, SOFIA MAGKIRIADOU, University of Chicago, MELISSA FERRARI, MINA YOUSSEF, MICHELLE DRISCOLL, STEFANO SACANNA, PAUL CHAIKIN, New York Univ NYU, WILLIAM IRVINE, University of Chicago — We study the behavior of a system of colloidal spinners, consisting of weakly magnetic colloids driven by a rotating magnetic field. First the particles are allowed to sediment to an equilibrium density profile in a gravitational field, from which we measure the equilibrium equation of state. By spinning the particles at various frequencies, we introduce activity into the system through the hydrodynamic interactions between particles. We observe that the activity expands the sedimentation profile to a new steady state, from which we measure the pressure as a function of the density and activity. We compare the effects of activity on the pressure and mean-squared displacement of spinners and tracer particles.

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