Abstract Submitted
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Jamming is not just isotropic anymore E. WANDERSMAN, Leiden Institute of Physics, Y. CHUSHKIN, ESRF, A. ROBERT, SLAC - Stanford, E. DUBOIS, V. DUPUIS, R. PERZYNSKI, LI2C, CNRS/UPMC/ESPCI — Slow dynamics observed in many disordered systems (colloidal glasses, jammed granular matter...) are poorly understood. An approach could consist to discriminate the dynamical properties of such systems by the nature of the interaction potential (attractive/repulsive, isotropic/anisotropic). While the anisotropy of the potential is relevant for the rotational dynamics, its effect on the translational dynamics in glasses is quite absent of current understanding. We investigate here the effect of the interaction potential on the translational dynamics, in a magnetic colloidal glass (charge–stabilized magnetic nanoparticles). By applying a magnetic field H, the potential is tuned, from quasi-isotropic to anisotropic, but remains repulsive on average. The translational dynamics of the nanoparticles is probed (with/without field) using dynamical X-ray scattering [1]. Under field, anisotropic translational dynamics and aging are observed. Moreover, a strong anisotropic cooperativity is reported, almost hundred times larger in the parallel direction. The results are discussed using a phenomenological picture. [1] E. Wandersman et. al., J. Phys. Cond. Mat. 20 (2007) 155104

E. Wandersman
Leiden Institute of Physics

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