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Voronoi liquids : a new model for probing glass transition CELINE RUSCHER, JOERG BASCHNAGEL, JEAN FARAGO, Institut Charles Sadron — Nowadays understanding the link between macroscopic observables and microscopic interactions among particles remains a key challenge in the physics of supercooled liquids. We developed a brand-new class of liquids for which the interactions are directly related to the inherent geometrical properties of Voronoi tessellations [1,2]. These so-called Voronoi liquids whose interactions are intrinsically many-body possess new and original microscopic properties in comparison to usual pair-potential based glass formers. These exotic features lead to non standard scaling and thermodynamic properties which can be used as new probes to investigate the different theoretical scenarios.
We focus here on the bidisperse Voronoi liquid tailored as to avoid crystallization. By studying this model theoretically and numerically for a wide bunch of temperatures at constant density, we observed indeed a glass transition which on the one hand displays the usual slowing down signatures common to all glass formers but also quite peculiar dynamical features, notably in the crucial mesoscopic range where unusually large relaxation times emerge. [1] J. Farago et al. EPJE, **37**, 2014 [2] C.Ruscher et al. EPL, **112**, 2015

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