Abstract Submitted
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Hyperuniformity of self-assembled soft colloidal spheres COLINE BRETZ, University of Pennsylvania, YE XU, Complex Assemblies of Soft Matter, CNRS-Rhodia-UPenn; University of Pennsylvania, TIM STILL, University of Pennsylvania, JEAN BAUDRY, ESPCI ParisTech/CNRS, LAWRENCE A. HOUGH, Complex Assemblies of Soft Matter, CNRS-Rhodia-UPenn, ARJUN G. YODH, University of Pennsylvania, SALVATORE TORQUATO, Princeton University, REMI DREYFUSS, Complex Assemblies of Soft Matter, CNRS-Rhodia-UPenn, COMPLEX ASSEMBLIES OF SOFT MATTER TEAM[1], DEPARTMENT OF PHYSICS AND ASTRONOMY TEAM[2], LABORATOIRE DE COLLOIDES ET MATERIAUX DIVISES TEAM[3] — Hyperuniformity characterizes a state of matter for which density fluctuations vanish on large scales. Hyperuniform materials are of technological importance as they exhibit interesting photonic properties. We have shown that such materials can be obtained by assembling spheres into a disordered jammed 2D- packing. To this end, we use a binary mixture of large and small Poly(NIPAM) particles confined between two cover slips. These soft spheres have been chosen for their temperature-sensitive properties. We can locally increase or decrease the volume fraction occupied by the spheres by finely tuning the temperature. By applying various temperature patterns, we are studying the spatial arrangements of the microgels and characterizing their hyperuniform properties through reconstruction and detection algorithms.

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