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Dynamical Heterogeneity close to the Jamming Transition in a Sheared Granular Material OLIVIER DAUCHOT, CEA/SPEC, GUILLAUME MARTY, City College of New York, GIULIO BIROLI, CEA/SPhT — The dynamics of a bi-dimensional dense granular packing under cyclic shear is experimentally investigated close to the jamming transition. Measurement of multi-point correlation functions are produced. The self-intermediate scattering function, displaying slower than exponential relaxation, suggests dynamic heterogeneity. Further analysis of four point correlation functions reveal that the grain relaxations are strongly correlated and spatially heterogeneous, especially at the time scale of the collective rearrangements. Finally, a dynamical correlation length is extracted from spatio-temporal pattern of mobility. Our experimental results open the way to a systematic study of dynamic correlation functions in granular materials.

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