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Yielding of glasses – a dynamic first-order transition? PETER SCHALL, University of Amsterdam, TRIET DANG, University of Amsterdam, The Netherlands, BERND STRUTH, German Electron Synchrotron (DESY), DMITRY DENISOV, University of Amsterdam, The Netherlands — We use a new combination of x-ray scattering and rheology to elucidate the yielding of glasses. By combining dynamic structure factor measurements with oscillatory rheology, we can resolve structural changes during the yielding of colloidal glasses. Surprisingly, we find a sharp symmetry change in the structure factor upon yielding, signaling a first order transition of the glass. This symmetry change is accompanied by a sharp change of fluctuations from non-Gaussian to Gaussian distributions of the scattered intensity. We interpret these observations as a new dynamically induced first order transition from a solid- to a liquid-like state of the glass.

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