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Searching for the Bose glass in disordered optical lattices with center-of-mass dynamics MI YAN, VITO SCAROLA, Virginia Tech — Ultracold atomic gases placed in optical lattices realize distinct many-body phases, including superfluids and Mott insulators. The addition of controlled disorder induces an additional phase, a Bose-Glass phase, that is difficult to unambiguously identify experimentally. We apply the time-dependent Gutzwiller mean-field method to model the transport properties of interacting bosons confined in disordered optical lattices after a sudden displacement of the underlying harmonic trapping potential. The edge superfluid is used to distinguish Bose glass and Mott insulator phases in the center of the trap by different center-of-mass dynamical signatures. We find that the edge superfluid oscillates after collision with the central Mott state. But the edge superfluid only drifts through a central Bose glass with a characteristic linear signature in long-time dynamics. Our work provides a method for experimental identification of the Bose glass in cold atom systems.

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