

Abstract Submitted
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Dynamical noise and avalanches in quasi-static plastic flow of amorphous solids ANAËL LEMAÎTRE, Institut Navier, CHRISTIANE CAROLI, INSP, Universite Pierre et Marie Curie-Paris 6, Universite Denis Diderot-Paris 7 — We build a mean-field model of plasticity of amorphous solids, based on the dynamics of an ensemble shear transformation zones, interacting via intrinsic dynamical noise generated by the zone flips themselves. We compare the quasi-static, steady-state properties for two types of noise spectrum: (G) Gaussian; (E) broad distribution derived from quadrupolar elastic interactions. We find that the plastic flow proceeds via avalanches whose scaling properties with system size are highly sensitive to noise tails. Comparison with available data suggests that non-affine strain fields might be of paramount importance in the small systems accessible to molecular simulations.

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