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Atomic-scale flow defect population in Cu-Zr metallic glass[1] SYLVAIN PATINET, PENGFEI GUAN, ADAM HINKLE, MICHAEL FALK[2], Department of Materials Science and Engineering, Johns Hopkins University, Baltimore, Maryland 21218, USA — We adapt the method developed by Manninget al.[PRL 107, 108302 (2011)] to characterize the flow defects population of a Cu-Zr metallic glass modeled using embedded atom method potentials. We investigate how the statistics of Shear Transformation Zones (STZs) change as a function of system size and quench rate during glass formation. We also consider the evolution of the STZ population during mechanical loading. On the basis of this analysis, we relate our results with predictions of the STZ theory of amorphous plasticity to consider the history dependence implicit in the strain-stress response of the metallic glass.

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