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Dislocation Pile-up/Grain Boundary Interactions MICHAEL DEWALD, Brown University, WILLIAM CURTIN, Brown University, BROWN UNIVERSITY TEAM — Dislocation and grain boundary migration contribute significantly to plasticity in metals, but little is understood as to how the interaction between them influence plastic response. A multiscale computational method (CADD) is used to study the effects of dislocation pile-ups on the grain boundary deformation, initiation of failure, and overall mechanical response. Use of CADD preserves accurate atomistic details while allowing a large number of dislocations to pile-up near a tilt boundary. The effects of applied loading, pile-up densities, and geometry on absorption, transmission, and damage initiation at the grain boundary are studied.

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