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A New Method for Identifying Defects in Disordered Solids SVEN WIJTMANS, Syracuse University, LISA MANNING, Syracuse University, Syracuse Biomaterials Institute Syracuse University — Characterizing defects in solids is an important step to developing continuum equations for failure in materials. Defects in crystalline solids (i.e. dislocations) are easy to characterize, but in disordered solids the lack of crystalline order makes it difficult to identify where particle rearrangements are likely to occur. Recently, vibrational modes have been used to identify flow defects or "soft spots" in disordered solids. However, the algorithm contains several free parameters that are difficult to constrain and does not provide detailed information about the nature of the defects. Here we describe a new method for identifying defects. We add spring-like interactions between coarse-grained grid points, thereby suppressing long-wavelength sound modes. This allows us to identify the energy barriers and precise displacements corresponding to defects, and potentially avoids systematic effects generated by elastic interactions between defects. Plastic events do occur at defect locations, and are correlated with the defect energy barriers. We find that the energy barriers of defects are significantly lower that the energy barriers for the eigenvectors.

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