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We study the plastic yielding of disordered media using the perfectly plastic random fuse m
yield surfaces are shown to be different from those obtained minimizing the sum of the l
thresholds, i.e., the so-called minimum ‘‘energy’’ surfaces. As aua79Tia97(.r37.20T4oca4-235o

spond to two different optimization problems in disordered media. As a consequence, the yield stress for PP is indeed smaller than the one observed for the equivalent ME problem, while the critical exponents of the surface and energy fluctuations appear to be the same. In two dimensions the yield surfaces have a roughness exponent of approximately ¼ 2=3, and the yield stress fluctuations scale with an exponent close to the ¼ 1=3 that corresponds to the ME universality class. However, the specific surfaces are different in the two cases. Indeed, the geometry of the surface in the PP problem shows the presence of overhangs and large

where i runs over all the bonds in the yield surface S that minimizes (1). In contrast, the PP surface S^0 would be the surface that requires a lowest external stress to appear and, therefore, the one that minimizes

$$\sigma_{c;PP} = \sum_{i \in S^0} \delta n_i$$

contrast, PP surfaces show strong deviations from simple