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Topological boundary modes in jammed matter DANIEL SUSSMAN, OLAF STENULL, TOM LUBENSKY, University of Pennsylvania — Granular matter at the jamming transition is poised on the brink of mechanical stability, and hence it is possible that these random systems have topologically protected surface phonons. Studying two model systems for jammed matter, we find states that exhibit distinct mechanical topological classes, protected surface modes, and ubiquitous Weyl points. The detailed statistics of the boundary modes enable tests of a standard understanding of the detailed features of the jamming transition, and show that parts of this argument are invalid.

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