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Absorbing states in periodically sheared particle packings near the jamming transition MAXIM LAVRENTOVICH, ANDREA LIU, University of Pennsylvania, SIDNEY NAGEL, University of Chicago — We apply quasistatic oscillatory shear to two-dimensional, constant-pressure packings of jammed particles interacting with Hertzian potentials at zero temperature. If the shear amplitude is sufficiently small, the motion becomes reversible after relatively few training cycles. In such an "absorbing state" the system returns to its exact starting configuration even though the system undergoes large rearrangements and visits multiple potential energy minima during a cycle. We study the character of these absorbing states as we decrease the pressure and approach the jamming transition. At high pressure, once in an absorbing state, the system returns to its initial configuration after each shear oscillation. As the jamming transition is approached, the periodicity of the motion increases and it takes an increasing number of cycles before all the particles return to their original positions.

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