

Abstract Submitted
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Coupling Between Translational and Orientational Ordering in Fiber Suspensions¹ ALEXANDRE FRANCESCHINI, EMMANOUELA FILIPPIDI, Center for Soft Matter Research, New York University, ELISABETH GUAZZELLI, IUSTI-CNRS UMR 6595 - Polytech Marseille - Aix-Marseille Université, DAVID PINE, Center for Soft Matter Research, New York University — Suspensions of non-colloidal particles under slow periodic strain undergo a non-equilibrium dynamical phase transition from an absorbing state to an active fluctuating state. In the case of spherical particles, this critical absorbing-phase transition is observed at a single strain amplitude. In the case of rod-like particles, the transition between fluctuating and absorbing phase is observed over a continuous range of applied strain amplitude: Orientational degrees of freedom couple to translational degrees of freedom, expanding the critical domain from a point to a line. Experiments and calculations show the orientation distribution of the rods with time and its relation with respect to the critical strains. Power-law relaxations are observed close to criticality and the measured exponents are consistent with Manna universality class of directed percolation models.

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