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Feedback-induced phase transitions in active porous media[1]
SAMUEL OCKO, Massachusetts Institute of Technology, L. MAHADEVAN, Harvard University — We consider a reduced-complexity model for an active porous medium where flow and resistance are coupled to each other i.e. the porous medium is modified by the flow and in turn modifies the flow. Using numerical simulations, we show that this results in both channelization and wall-building transitions depending on the form of the feedback. A continuum model allows us to understand the qualitative features of the resulting phase diagram, and suggests ways to realize complex architectures using simple rules in engineered systems.

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