Dynamics of precipitation pattern formation at geothermal hot springs

NIGEL GOLDENFELD, University of Illinois at Urbana-Champaign

The spectacular terraced landscape at geothermal hot springs is a world-wide phenomenon, shown here to arise from the nonlinear interplay between turbulent fluid transport and precipitation dynamics. The system is modeled successfully using a discrete space-time model, justified both from renormalization group considerations and our experience modeling phase transition kinetics in condensed matter systems. A variety of scaling laws are predicted and compared with field observations.

1This work was supported by NSF Grant NSF-EAR-02-21743