

Abstract Submitted
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Pattern selection in columnar joints LUCAS GOEHRING, STEPHEN MORRIS, University of Toronto — The pattern of columnar jointing is well known from geological formations such as the Giant's Causeway in N. Ireland, or the Devil's Postpile in California. It arises when a directionally propagating array of cracks arrange themselves into a roughly hexagonal network, which leaves behind a remarkably well ordered collection of prismatic columns. This ordering is efficient, and visually impressive, but not perfect. Experimental observations of columnar jointing in corn starch have shown that, as it matures, the pattern settles down into a well defined, statistically steady state with residual disorder. The same quantifiable amount of disorder can be shown to exist in the pattern of igneous columnar jointing. We report on the dynamics of the mature pattern of columnar jointing, and compare it to models of this phenomenon. In particular, we compare it to an evolution model based on voronoi tessellations, a phase-field model, and a model inspired by 2D foam coarsening.

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