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Rayleigh-Taylor instability in rotating volcanic umbrellas PINAKI CHAKRABORTY, SUSAN KIEFFER, GUSTAVO GIOIA, University of Illinois at Urbana-Champaign — We study the shape of an expanding volcanic umbrella that is turbulent and is rotating about a vertical axis though the center of the umbrella. We argue that the centrifugal forces associated with the rotation of the umbrella trigger a turbulent variant of the Rayleigh–Taylor instability. As a manifestation of this instability, the edge of the umbrella becomes wavy. As a test case, we consider the wavy umbrella from the climactic eruption of Mount Pinatubo on June 15, 1991.

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