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Untying the Knot: Topological Vortex Dynamics DUSTIN KLECKNER, MARTIN SCHEELER, University of Chicago, DAVIDE PROMENT, University of East Anglia, WILLIAM T.M. IRVINE, University of Chicago — Knots and links are thought to be associated with topologically conserved quantities in many physical fields, including quantum and classical fluids, plasmas and electromagnetic fields. Observing topological dynamics in experiment, however, has proven difficult. Recent advances have made it possible to generate and measure vortex knots in classical fluids, revealing that they spontaneously untie themselves through a series of topology-changing reconnections. Similar behavior is found for simulations of superfluid knots. We will discuss these dynamics as well as their implications for the role of knots in fluids and other areas of physics.

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