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Inclined vortex rings interacting with a density interface BENJAMIN JACKSON, STUART DALZIEL, DAMTP, University of Cambridge, MUST TEAM — The interaction between a vortex ring and a density interface is a canonical problem for studying turbulence in stratified environments. Localised coherent structures containing highly vortical motion are often associated with turbulence. Vortex rings provide a simple analogy for such structures to study small scale mixing processes, allowing insight into energy transfers within the turbulence and entrainment across the interface. Since Linden's introduction of the problem over 40 years ago, most studies have been restricted to the case of vortex rings propagating normal to a density interface. Recently, Olsthoorn and Dalziel showed the development of symmetry-breaking instabilities during such an interaction are of critical importance to the resultant mixing. Here we consider the problem of vortex rings impinging at other angles. We present key results on how breaking the axisymmetry of the problem impacts the dynamics of the interaction and the mixing that ensues.

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