Vortex knottiness in superfluids HRIDESH KEDIA, The University of Chicago, DUSTIN KLECKNER, University of California, Merced, DAVIDE PROMENT, University of East Anglia, WILLIAM IRVINE, The University of Chicago — Recent work has demonstrated that linked and knotted vortices will spontaneously unknot or untie in both classical fluids and superfluids. This effect would appear to jeopardize any notion of conservation of fluid topology (helicity), but this need not be the case: vortices can transfer their knottedness to helical coils, preserving some measure of the original topology. We ask how this notion of topology preservation behaves in the context of collections of vortices with topology. We address this question by numerical simulations of superfluid vortices in the Gross-Pitaevskii equation.

Hridesh Kedia
The University of Chicago