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Hybrid shells of nematic liquid crystal ALBERTO FERNANDEZ-NIEVES, TERESA LOPEZ-LEON, Georgia Tech — We investigate the consequences of changing the boundary conditions for the nematic director at the outer surface of a spherical shell from planar to homeotropic. We find there are different routes to the final equilibrium configuration, depending on the initial shell structure. For bipolar shells, which are shells having two pairs of s=+1 boojums on either surface, a disclination ring forms, shrinks and disappears in a process that is highly reminiscent of that seen in bipolar drops. By contrast, shells with four s=+1/2 defects develop open disclination lines in the inner surface; these lines form between the original s=+1/2 defects and force their approach and coalescence. These results highlight the fascinating range of behaviors that are driven by the interplay between topological constraints and the nematic order of liquid crystals.

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