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**Dynamic spiral patterns in Langmuir monolayers of chiral molecules** LENA LOPATINA, JONATHAN V. SELINGER, Liquid Crystal Institute, Kent State University — Experiments with Langmuir monolayers of chiral molecules on a water surface report a collective propeller-like precession of the molecules due to the evaporation of water [1]. If the molecular orientation is pinned along an edge, the precession leads to a series of stripes along the edge. This pattern formation has been explained by a dynamic equation due to the Lehmann effect [2]. Here, we consider how the patterns change if the monolayer contains vortices, topological defects which pin the molecular orientation. We model an annular ring with a single vortex at its center, and show that the director field forms a spiral centered at the defect, which reverses handedness between the inner and outer boundaries. We also simulate a system with one vortex and one anti-vortex on a lattice, and find that the defects form spirals with opposite handedness. These analytic and computational results are in good agreement with preliminary experiments [3].
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