# Sculpting liquid crystal skyrmions with external flows

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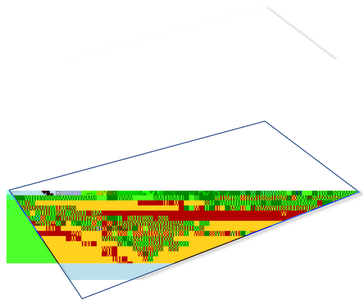
are effectively two different geometric embodiments of the same topological object, much like a coffee mug and a doughnut have the same surface topology, and one would, thus, expect to being able to morph one into another. Such homeomorphic transformation was indeed demonstrated by Sohn *et al.* using laser tweezers [36], but the question arises if topology-preserving morphing can be also realized by other physical stimuli [37–40], including fluid flows.

Despite the extensive body of research on LC solitons, their interaction with externally imposed material flow fields remains poorly understood. In our recent paper [41] we reported a numerical study, based on the Ericksen-Leslie nematohydrodynamics, of the effect of external flows on the structures and dynamics of LC skyrmions. We found a configurational transition driven by the flow, from skyrmionic distortions along the flow in weak flows to skyrmionic distortions in the direction perpendicular to the flow in strong flows.

Here, we extend that study and address explicitly the re-




$10^{-1}$
$10^{0}$
$10^{1}$
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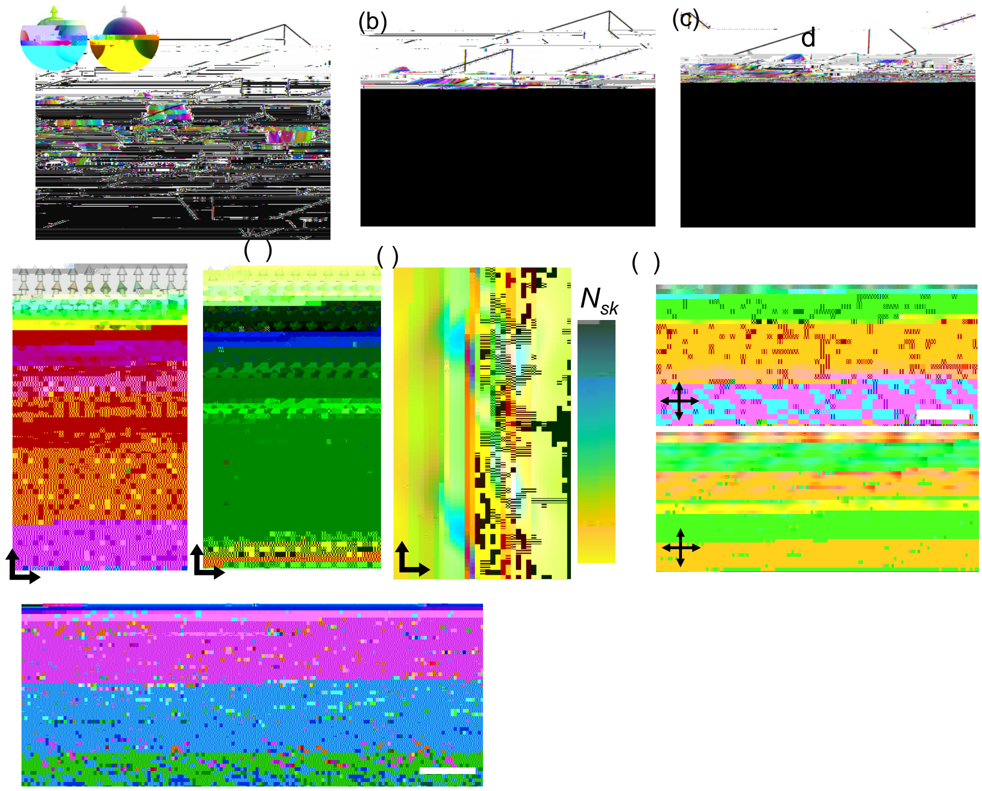
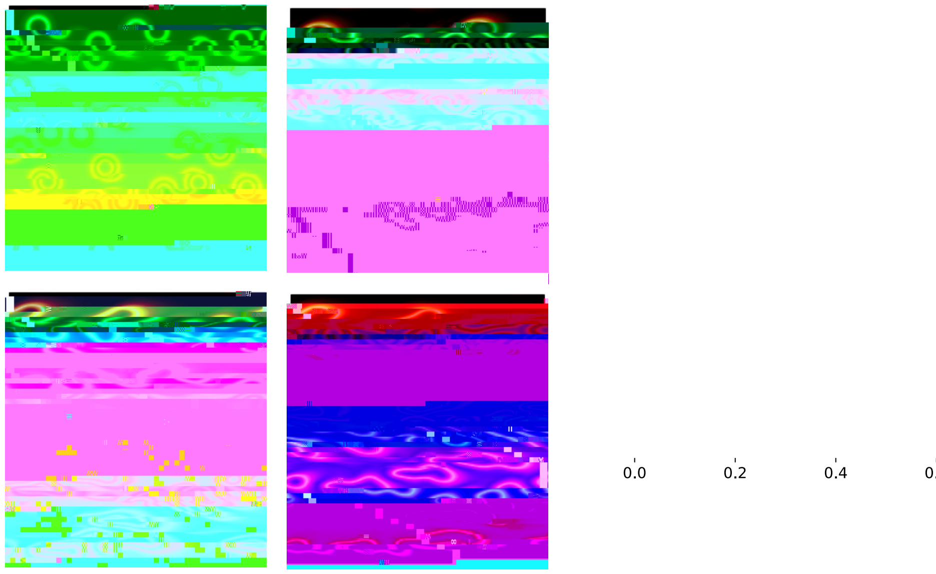

(b)
(c)
d
$N_{sk}$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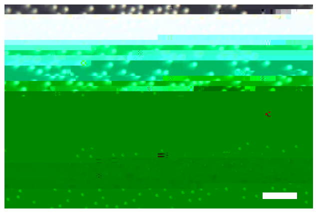

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