Electronic Supplementary Information

Transition from Escaped to Decomposed Nematic Defects, and vice versa

Adam L. Susser, Saša Harkai, Samo Kralj, and Charles Rosenblatt

- **Video 1:** Real time bright field video of Escaped Radial (m = +1) to Split defect (m = +1/2) transition in ZLI-4330 as voltage was ramped upward at ~ 1 V s⁻¹ in the neighbourhood of the threshold electric field E_{th} ~ 29.6 V μ m⁻¹. Notice the jitter in the defect just before the transition occurs, and the co-rotation of the defects above the threshold. Scale bar corresponds to 15 μ m.
- **Video 2:** Real time bright field video of transition from a pair of m = +1/2 defects to an Escaped Radial configuration in 5CB as voltage was ramped upward at ~ 0.1 V s⁻¹ in the neighbourhood of the threshold electric field E_{th} ~ 0.28 V μ m⁻¹. Scale bar corresponds to 15 μ m.
- **Video 3**: Real time bright field video of Split defect (m = -1/2) to Escaped Radial (m = -1) transition in 5CB as voltage was ramped upward at ~ 0.32 V s⁻¹ in the neighbourhood of the threshold electric field E_{th} ~ 0.36 V μ m⁻¹. The width of the half-integer defects is approximately 700 nm.
- **Video 4:** Real time polarized microscope video after the transition from a pair of m = +1/2 defects to an Escaped Radial configuration in 5CB as voltage was ramped downward at ~ 0.1 V s⁻¹. The video shows a dark ring, corresponding to an optical phase retardation $\alpha = 4\pi$, collapsing toward the defect core as the director field returns toward the xy-plane away from the core with decreasing electric field. This indicates that the region beyond the dark ring has a retardation $\alpha > 4\pi$. Scale bar corresponds to 15 µm.
- Supplementary Figure 1: Polarized microscope images of the ER to m = +1/2 split defect. The threshold field is slightly larger for this defect than that shown in Fig. 5 of the main article, likely due to small differences in the surface scribing conditions.



Supplementary Figure 1: Polarized microscope images of ER to split defects at E = a) 0, b) 1.1, c) 35.1 V μ m⁻¹. Then d) 35.1, e) 0 V μ m⁻¹. Scale bar corresponds to 15 μ m.