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Supplementary movies

- S1: Kink walls with defects in the parameters range corresponding to the homogeneous isotropic state of the passive system: r = -1, $\tilde{\kappa} = 10$, $|\tilde{\alpha}| = 20$, $\lambda = 1.5$, L = 50. Most of the defect pairs annihilate and only a single $\pm 1/2$ pair remains unbound at long times (seeFig. 2a of the main text).
- S2: Kink walls in the parameters range corresponding to the homogeneous isotropic state of the passive system: r = -1, $\tilde{\kappa} = 10$, $|\tilde{\alpha}| = 30$, $\lambda = 1.5$, L = 50. All defect pairs annihilate and the final state is defect free (see Fig. 2b of the main text).
- S3: Formation of periodic bend textures in the region where the uniform nematic state is linearly unstable. The parameter values are: $r = 2, \tilde{\kappa} = 10, |\tilde{\alpha}| = 3, \lambda = 1.5, L = 50$ (see Fig. 2c of the main text).
- S4: Kink walls with defects in the parameters range corresponding to the homogeneous nematic state of the passive system: $r = 2, \tilde{\kappa} = 10, |\tilde{\alpha}| = 6, \lambda = 1.5, L = 50$. The final configuration is similar to that in S1.
- S5: Kink walls in the parameter range corresponding to the homogeneous nematic state of the passive system: $r = 2, \tilde{\kappa} = 10, |\tilde{\alpha}| = 30, \lambda = 1.5, L = 50$. The final configuration is similar to that in S2 (see Fig. 2e of the main text).
- S6: Turbulent state in the parameter range corresponding to the homogeneous nematic state of the passive system: $r = 2, \tilde{\kappa} = 10, |\tilde{\alpha}| = 40, \lambda = 1.5, L = 50$. The movie shows defect proliferation with a non-zero steady state defect density (see Fig. 2e of the main text).
- S7: Transient anti-parallel alignment of +1/2 defects in a parameter regime where the homogeneous state is isotropic in absence of activity. The parameter values are: $r = -1, \tilde{\kappa} = 10, |\tilde{\alpha}| = 14, \lambda = 1.5, L = 50$. We find rows of anti-parallel +1/2 defects at intermediate times, but the final steady state is defect free, with system-spanning kink walls (see Fig. 6 of the main text).
- S8: Turbulent state in a parameter range corresponding to the homogeneous isotropic state of the passive system: $r = -1, \tilde{\kappa} = 10, |\tilde{\alpha}| = 40, \lambda = 1.5, L = 50$. The final configuration is qualitatively similar to the one found in S6.