

Supplementary Information for Vorticity phase separation and defect lattices in the isotropic phase of active liquid crystals

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I. VIDEOS' PARAMETERS

The videos have been created by numerically integrating equations (1) in the main text, with the parameter values given below. In each video, in the left frame, the color is the vorticity and the lines display the orientations of the director field. In the right frame the color is the speed of the active flows and the black arrows denote the direction of the flow velocity. Defects are denoted by red arrows pointing in the polarization of the defect for $+1/2$ defects, and magenta dots for $-1/2$.

Video 1; showing a state of sliding defects in absence of friction.

$a = 1$, $b = 1000$, $K = 4$, $\lambda = 0.7$, $\eta = 1$, $\Gamma = 0$, $\alpha = -5$.

Video 2; showing a state of active turbulence in absence of friction

$a = 1$, $b = 1000$, $K = 4$, $\lambda = 0.7$, $\eta = 1$, $\Gamma = 0$, $\alpha = -15$

Video 3; showing the active turbulent regime with finite friction.

$a = 1$, $b = 1000$, $K = 4$, $\lambda = 0.7$, $\eta = 1$, $\Gamma = 0.01$, $\alpha = -8$.

Video 4; showing a square lattice of vortices with rows of sliding defects, in a case of finite friction.

$a = 1$, $b = 1000$, $K = 4$, $\lambda = 0.7$, $\eta = 1$, $\Gamma = 0.15$, $\alpha = -8$.

Video 5; showing the chiral state with a hexagonal lattice of flow vortices, each trapping a pair of $+1/2$ defects.

$a = 1$, $b = 1000$, $K = 4$, $\lambda = 0.7$, $\eta = 1$, $\Gamma = 0.01$, $\alpha = -5.8$

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