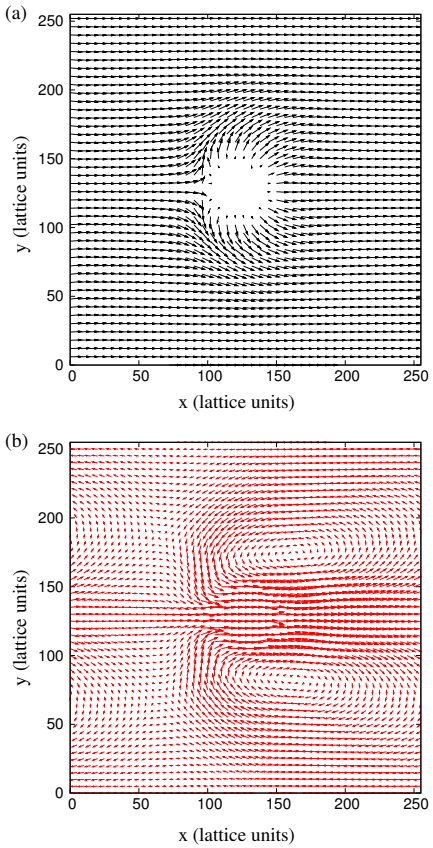
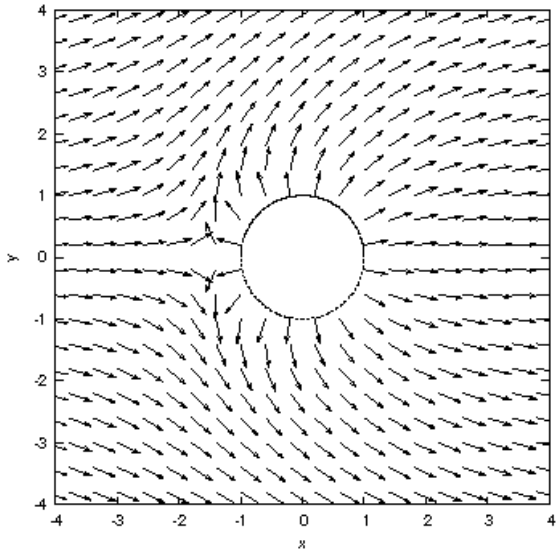
Electronic Supplementary Material (ESI) for Soft Matter.

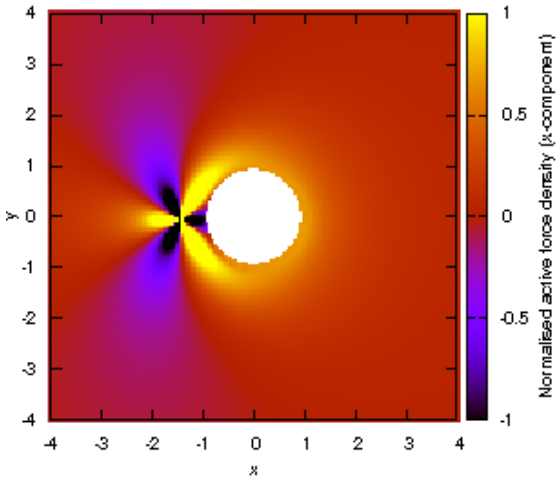
Spontaneous motility of passive emulsion droplets in polar active gels: Supplementary Figures



Suppl. Fig. 1: The polarisation field outside an isotropic droplet with homeotropic anchoring on its surface is reported in (a) for the contractile case, with $\zeta = -0.0001$, $\kappa = 0.02$, $k = 0.14$. The lattice size is $L_x = L_y = 256$. The other parameters are as in section 2 in the main text. The corresponding velocity field profile is shown in (b). Similarly to what seen for the rectangular box, the droplet acquires motility and the flow pushes it along the positive x-direction, with a defect located on the left side of the surface of the droplet.



Suppl. Fig. 2: Polarisation field computed analytically outside an isotropic droplet, with homeotropic anchoring at the surface, in an infinite system. We assumed a constant modulus of $\mathbf{P}$ ($|\mathbf{P}| = 1$), and chose $c_0 = 1.5$ (see main text). The x and y coordinates are given in units of the droplet's radius.



Suppl. Fig. 3: Contour plot of the active force density (x component) corresponding to the polarisation in Suppl. Fig. 2, for a contractile active fluid. The distribution of forces drive the motion of the droplet to the right as in simulations (see main text). Notice that areas around the defects actually have higher force density than shown, but this is 'capped' by the range used for readability.