Electronic Supplementary Material (ESI) for Soft Matter.
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Supplementary Information for

Collective behavior of squirmers in thin films

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Supplementary Movies

Movie S1: Gas-like state of pushers at the volume fraction $\phi = 0.18$ ($N_{sq} = 228$), active stress $\beta = -5$, and rotlet dipole strength $\tilde{\lambda} = 0$.

Movie S2: Gas-like state of neutral squirmers at the volume fraction $\phi = 0.18$ ($N_{sq} = 228$), active stress $\beta = 0$, and rotlet dipole strength $\tilde{\lambda} = 0$.

Movie S3: Motility-induced phase separation of pullers at the volume fraction $\phi = 0.18$ ($N_{sq} = 228$), active stress $\beta = 5$, and rotlet dipole strength $\tilde{\lambda} = 0$.

Movie S4: Swarming of pushers at the volume fraction $\phi = 0.35$ ($N_{sq} = 456$), active stress $\beta = -5$, and rotlet dipole strength $\tilde{\lambda} = 0$. Different views, including $x - z$ plane (top) and $x - y$ plane (bottom), are shown.

Movie S5: Motility-induced phase separation of neutral squirmers at the volume fraction $\phi = 0.35$ ($N_{sq} = 456$), active stress $\beta = 0$, and rotlet dipole strength $\tilde{\lambda} = 0$.

Movie S6: Motility-induced phase separation of pullers at the volume fraction $\phi = 0.35$ ($N_{sq} = 456$), active stress $\beta = 5$, and rotlet dipole strength $\tilde{\lambda} = 0$. Different views, including $x - z$ plane (top) and $x - y$ plane (bottom), are shown.

Movie S7: Swarming of pushers at the volume fraction $\phi = 0.35$ ($N_{sq} = 456$), active stress $\beta = -5$, and rotlet dipole strength $\tilde{\lambda} = 133.5$. Different views, including $x - z$ plane (top) and $x - y$ plane (bottom), are shown.

Movie S8: Swarming of neutral squirmers at the volume fraction $\phi = 0.35$ ($N_{sq} = 456$), active stress $\beta = 0$, and rotlet dipole strength $\tilde{\lambda} = 133.5$.

Movie S9: Swarming of pullers at the volume fraction $\phi = 0.35$ ($N_{sq} = 456$), active stress $\beta = 5$, and rotlet dipole strength $\tilde{\lambda} = 133.5$. Different views, including $x - z$ plane (top) and $x - y$ plane (bottom), are shown.