Supplemental material for "Collective Dynamics in a Monolayer of Squirmers Confined to a Boundary by Gravity"

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Video S1
Hydrodynamic Wigner fluid at $\beta = 0$ and $\phi = 0.26$. Linear system size is $L = 448$. The Voronoi tessellation for the centers of the squirmers is shown; hexagons are colored green, whereas pentagon and heptagon defects are colored yellow and red, respectively. A single squirmer is shown as blue circle.

Video S2
Kissing at $\beta = 2$ and $\phi = 0.40$. Linear system size is $L = 112$. A kissing trimer is indicated by the red circle.

Video S3
Global cluster at $\beta = 0$ and $\phi = 0.79$. Linear system size is $L = 112$. The Voronoi tessellation for the centers of the squirmers is shown; hexagons are colored green, whereas pentagon and heptagon defects are colored yellow and red, respectively.

Video S4
Fluctuating chains and trimers at $\beta = -1$ and $\phi = 0.40$. Linear system size is $L = 112$.

Video S5
Swarming emerges as the in-plane velocities align at $\beta = -2$ and $\phi = 0.49$. Linear system size is $L = 112$.

Video S6
Chaotic swarming at $\beta = -5$ and $\phi = 0.58$. Linear system size is $L = 112$.

Video S7
Overview of dynamic states at various densities ϕ and squirmer parameter β. Linear system size is $L = 112$ for all simulations.

Video S8
Hydrodynamic Wigner fluid at $\beta = 0$ and $\phi = 0.26$. Linear system size is $L = 448$. All squirmers are shown as blue circles.

Video S9
Hydrodynamic Wigner fluid at $\beta = 2$ and $\phi = 0.26$. Linear system size is $L = 448$. The Voronoi tessellation for the centers of the squirmers is shown; hexagons are colored green, whereas pentagon and heptagon defects are colored yellow and red, respectively. A single squirmer is shown as blue circle.

Video S10
Fluctuating pairs at $\beta = 1$ and $\phi = 0.33$. Linear system size is $L = 112$.

Video S11
(Rotating) heptamers at $\beta = -1$ and $\phi = 0.68$. Linear system size is $L = 112$.

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