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Dynamics of cluster growth in a system of self-propelled particles MICHELLE DRISCOLL, MELISSA FERRARI, JEREMIE PALACCI, PAUL CHAIKIN, New York Univ NYU — Self-propelled particles are a simple realization of an active-matter system; particles are continuously driven and thus inherently out of equilibrium. It has recently been shown that this leads to a rich variety of behaviors, including self-organization into dynamic clusters. Particles aggregate into clusters which are not static, but are constantly growing and shrinking by exchanging particles, coalescing, and breaking apart. Here we study in detail the dynamics of this process in a system of photo-activated colloidal swimmers. Soon after the self-propulsion mechanism is activated, a large fraction of the swimmers quickly incorporate into clusters. We measure the distributions of cluster size, and show that a substantial population of small clusters can persist even at late times. Additionally, we examine how geometric confinement of the system can alter cluster growth dynamics.

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