

Abstract Submitted  
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**Segregation of colloidal swimmers by their activity**<sup>1</sup> MELISSA FERRARI, MENA YOUSSEF, MICHELLE DRISCOLL, STEFANO SACANNA, DAVID PINE, PAUL CHAIKIN, New York University — We study a system of micron sized self-propelled colloidal swimmers whose activity can be switched on or off with the flick of a light switch. We have designed a system where an external LED source reflects light off of an array with hundreds of thousands of independently controlled tiny mirrors, through an optical microscope, and onto the plane of the swimmers. By exposing a collection of particles to a spatial or dynamic light field, we have the ability to control the speed of a particle based on its position, and therefore the density of the collection of particles in space. Theoreticians in the field have been building a framework that describes systems which are out-of-equilibrium and we will show how our system can be useful tool in mapping these theories to experiment.

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