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Using light patterns to manipulate self-propelled particles MELISSA FERRARI, MICHELLE DRISCOLL, Department of Physics, New York University, JEREMIE PALACCI, Department of Physics, University of California, San Diego, STEFANO SACANNA, Department of Chemistry, New York University, DAVID PINE, PAUL CHAIKIN, Department of Physics, New York University — Soft active matter systems, characterized by their ability to extract energy from their environment to perform mechanical work, exhibit phenomena far from equilibrium. We study a class of synthetic light activated colloidal swimmers which self-propel osmotically on a surface. Here we propose a method to manipulate the migration of the light activated colloids by carefully tuning their macroscopic environment. Through integration of a modified commercial projector with an optical microscope, we are able to shine static and dynamic light patterns onto the sample plane where the light activated swimmers live. We can use specific light patterns to set up swimmer density gradients in our sample.

Melissa Ferrari
New York University

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