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Using light patterns to manipulate self-propelled particles
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Soft active matter systems, characterized by their ability to extract energy from
their environment to perform mechanical work, exhibit phenomena far from equi-
librium. 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 envi-
ronment. 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.

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