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**Hydrodynamic Capture of Particles by Micro-swimmers under Hele-Shaw Flows** GRANT MISHLER, Santa Clara University, ALAN CHENG HOU TSANG, Stanford University, ON SHUN PAK, Santa Clara University — We explore a hydrodynamic capture mechanism of a driven particle by a micro-swimmer in confined microfluidic environments with an idealized model. The capture is mediated by the hydrodynamic interactions between the micro-swimmer, the driven particle, and the background flow. This capture mechanism relies on the existence of attractive stable equilibrium configurations between the driven particle and the micro-swimmer, which occurs when the background flow is larger than a certain critical threshold. Dynamics and stability of capture and non-capture events will be discussed. This study may have potential applications in the study of capture and delivery of therapeutic payloads by micro-swimmers as well as particle self-assembly under confinements.

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