Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

Stochasticity enhances hydrodynamic trapping of swimming particles in chaotic flow NIDHI KHURANA, NICHOLAS T. OUELLETTE, Yale University — We use numerical methods to investigate the dynamics of swimming particles in a two-dimensional chaotic flow field. We model the swimmers as point-like spherical particles. We include stochastic motion in addition to deterministic swimming. We find that hydrodynamic trapping, which we had previously observed for deterministic swimming alone, can be significantly enhanced by the addition of noise terms. We therefore argue that a suppression of transport due to particle activity does not depend on the detailed swimmer model, but is likely a generic effect.

Nidhi Khurana
Yale University

Date submitted: 01 Aug 2011 Electronic form version 1.4