

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Collective motion, superdiffusion, and non-thermal noise in active bacterial baths DANIEL T.N. CHEN, L.A. HOUGH, M.F. ISLAM, A.W.C. LAU, T.C. LUBENSKY, A.G. YODH, Dept. of Physics & Astronomy, University of Pennsylvania — We present experimental studies of the dynamics of concentrated bacterial colonies in three-dimensions. The bacteria we use is *e. coli* at varying densities. By analyzing the trajectories of colloidal spheres embedded in these bacterial bath suspensions, we extract one- and two-point mean square displacements which exhibit superdiffusion crossing over to a diffusive regime. When combined with independent measurements of the response function of the suspension, the data enable us to extract the noise spectrum of the bath. This work was supported by NSF DMR02-03378 and NASA NAG3-2172

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Date submitted: 06 Jan 2005

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