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Large scale flows and density fluctuation in ensembles of swimming bacteria[1] ANDREY SOKOLOV, IGOR ARONSON, Argonne Natl Lab, JOHN KESSLER COLLABORATION, RAYMOND GOLDSTEIN COLLABORATION — We study experimentally self-organization of concentrated ensembles of swimming bacteria Bacilus Subtilis. Experiments are performed in a very thin (of the order of 1 bacterium diameter) fluid film spanned between four supporting fibers. Small amplitude electric field is used to adjust dynamically the density of bacteria inside the experimental cell. Our experiments revealed only gradual increase of the large scale flow correlation length with the increase in number density of bacteria, and no sharp transition. The fluctuation of density of bacteria as a function of thickness of the film was explored.

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Andrey Sokolov
Argonne Natl Lab

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