

Abstract Submitted
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Microrheology of swimming bacteria suspension.¹ ANDREY SOKOLOV, IGOR ARONSON, Argonne National Laboratory — We study rheology of suspension of swimming bacteria *Bacillus Subtilis* at high concentrations. Experiments were performed in a free standing fluid film contained in a transparent chamber with adjustable Oxygen/Nitrogen ratio. The swimming velocity of bacteria is controlled by the concentration of dissolved Oxygen: it reduces to zero when Oxygen is completely replaced by Nitrogen. Macroscopic flow in a film is produced by oscillations and rotations of magnetic particles by rotating external magnetic field. To extract the effective viscosity, we measured macroscopic velocity field generated by the particles using PIV of fluorescent markers seeded to the film. We discovered that viscosity of bacterial suspension is increasing with decreasing swimming speed of bacteria due lack of Oxygen.

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