Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

'Superfluid' vs collective motion in model active suspensions
ALEXANDER MOROZOV, VIKTOR ŠKULTÉTY, School of Physics & Astronomy, University of Edinburgh, UK — Systems comprising active particles often exhibit non-zero steady-state currents, and possess unique mechanical and transport properties that are absent from their passive counterparts. One of the most striking examples of such properties is the recent experimental observation of a vanishingly small shear viscosity in suspensions of swimming bacteria.
Here, we present our recent results on the connection between this phenomenon and the onset of collective motion in bacterial suspensions. We find that confinement strongly influences both phenomena, and that the apparent viscosity drops to zero before the transition to collective motion. We compare our predictions against the active gel theory, and discuss their relevance to recent experiments.

Alexander Morozov
School of Physics & Astronomy, University of Edinburgh

Date submitted: 31 Jul 2019 Electronic form version 1.4