**Stability of streamwise vortices in shear flows of viscoelastic fluids** ALEXANDER MOROZOV, School of Physics & Astronomy, University of Edinburgh — Recent work on transient growth in viscoelastic shear flows [1] suggests that even though these flows are linearly stable, a non-modal perturbation could be sufficiently amplified resulting in long-living transient disturbances. Similar to Newtonian shear flows, these disturbances take form of the streamwise vortices. Here we perform a linear stability analysis of the streamwise vortices superimposed on the steady shear flow. We find that this flow is linearly unstable towards 3D perturbations. In Newtonian case, this instability is known to play an important role in sustaining exact coherent structures [2] that dynamically organise the transition to turbulence. We discuss the possibility that similar structures exist in viscoelastic shear flows.

[1] M. Jovanovic and S. Kumar, Phys. Fluids 22, 023101 (2010)
[2] F. Waleffe, Phys. Fluids 9, 883 (1997)

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