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POD analysis of viscoelastic flow instabilities DAVID STEIN, BECCA THOMASES, Univ of California - Davis — Elastic instabilities in low Re viscoelastic flows near extensional points have been identified in experiments and simulations and are thought to be related to elastic turbulence. We study an unsteady two dimensional Stokes Oldroyd-B extensional point flow. Beyond a critical Weissenberg number, the system displays complex time-dependent flow patterns. We examine these quasi-periodic states in detail, and use proper orthogonal decomposition (POD) to extract the dominant oscillatory flow features in an effort to understand the elastic instability and the possible transition to elastic turbulence.

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