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Non-asymptotic Elastoinertial Turbulence for Asymptotic Drag Reduction[1] LI XI, LU ZHU, McMaster University — Polymer-induced drag reduction is bounded by an asymptotic limit of maximum drag reduction (MDR). For decades, researchers have presumed that MDR reflects the convergence to an ultimate flow state that is not further changed by polymers. Our simulation shows that, as drag reduction converges to its invariant limit, the underlying dynamics continues to evolve with no sign of convergence. The stage of asymptotic drag reduction is not represented by any single flow state, but encompasses states with varying dynamical patterns, all of which are partially sustained by polymer elasticity.

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