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Investigation of Turbulent Laminar Patterns in Poiseuille-Couette flow QUOC NGUYEN, The University of Oklahoma, DIMITRIOS PAPAVASSILIOU, The University of Oklahoma & NSF — Laminar-turbulent intermittency has recently been observed in the transitional regime of pipe ...[1-2] and plane Couette flow ...[3-7]. While many works focus on behavior of these patterns in plane Couette flow, little attention has been paid to Poiseuille flow and transition from Couette to Poiseuille flow. In this study, we investigate behavior of turbulent laminar patterns in Poiseuille-Couette flow, including pure Poiseuille and Couette flows at two limits. Direct Numerical Simulation (DNS) is used to simulate a Poiseuille-Couette channel at a size of 16πh x 2h x 2πh (corresponding to a resolution of 512x129x128 in x, y and z directions), with periodic boundary condition applied in the x and z directions (h is half of the channel height). The Reynolds number is 300, and the flow is at transitional regime in all simulations. Behavior of laminar turbulent patterns as the flow goes from Couette to Poiseuille flow will be presented in details. This would shed some light on the effect of different types of flow on these patterns, as well as how these patterns vary from fully Poiseuille flow to fully Couette flow. Bibliography .1. Moxey D & Barkley D (2009), *PNAS* 107(18). 2. Samanta D, Lozar AD, & Hof B (2011). *J. Fluid Mech.* 681. 3. Barkley D & Tuckerman LS (2005) *Phys. Rev. Lett.* 94. 4. Duguet Y & Schlatter P (2013) *Phys. Rev. Lett.* 110. 5. Philip J & Manneville P (2011). *Phys. Rev. E* 83. 6. Tuckerman LS & Barkley D (2011) *Phys. Fluids* 23. 7. Shi L, Avila M, & Hof B (2013) *Phys. Rev. Lett.* 110.

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