Properties of the Mean Momentum Balance in Polymer Drag Reduced Channel Flow CHRISTOPHER WHITE, University of New Hampshire, YVES DUBIEF, University of Vermont, JOSEPH KLEWICKI, University of New Hampshire and University of Melbourne — The redistribution of mean momentum and the underlying mechanisms of the redistribution process in polymer drag reduced channel flow are investigated by employing a mean momentum equation based analysis. The work is motivated by recent studies that showed (contrary to long-held views) that polymers modify the von Karman coefficient, κ, at low drag reduction, and at some relatively high drag reduction eradicate the inertially dominated logarithmic region. Since κ is a manifestation of the underlying dynamical behaviors of wall-bounded flow, understanding how polymers modify κ is inherently important to understanding the dynamics of polymer drag reduced flow, and, consequently, the phenomenon of polymer drag reduction. The goal of the present study is to explore and quantify these effects within the framework of a mean momentum based analysis.

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