

# Elastic effects on vortex sheets and boundary layers

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Elasticity is important in continuum mechanics with a wide range of applications and is challenging in analysis. In this talk we shall first review some basic mathematical results and then discuss some special elastic effects in elastic fluids. The first elastic effect is the stabilizing effect of elasticity on the vortex sheets in compressible elastic flows. Some recent results on linear and nonlinear stability of compressible vortex sheets will be presented. The second effect is on the vanishing viscosity process of compressible viscoelastic flows on the half plane under the no-slip boundary condition. It is well-known that for the corresponding inviscid limit of the compressible Navier-Stokes equations with the no-slip boundary condition, one does not expect uniform energy estimates of solutions due to the appearance of strong boundary layers. Our results show that the deformation tensor can prevent the formation of strong boundary layers. The talk is based on the recent results with several collaborators.