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Spreading of viscoelastic droplets YULI WANG, DO-QUANG MINH, GUSTAV AMBERG , KTH Mechanics — We intend to gain new insights into the spreading dynamics of viscolastic droplets from a numerical perspective. Focusing on the the Giesekus droplet and the Oldroyd-B droplet, we simulated the viscous spreading and the spreading after impacting on a horizontal surface. The results qualitatively agree with some experimental observations on Boger fluids and shear-thinning fluids. We discuss how shear-thinning and elasticity influence the contact line motion, given detailed information on the flow field, the stress distribution and the contact line morphology in the near vicinity of the contact line. The results suggest that viscoleastic droplets can spread faster than their Newtonian counterparts. The spreading speed of the Oldroyd-B fluid shows dependence on elasticity while the one of the Giesekus droplet does not.

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