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**The stability of viscous liquid filaments** THEO DRIESSEN, University of Twente, ROGER JEURISSEN, Eindhoven University of Technology, HERMAN WIJSHOFF, OCE technologies N.V. , DETLEF LOHSE, University of Twente — The stability of liquid filaments is relevant both in industrial applications, such as inkjet printing and atomization, and in nature, where the stability of filaments has a large influence on the final drop size distribution of rain droplets and waterfalls. The liquid filament may either stably collapse into a single droplet, or break up into multiple droplets. Which scenario is realized depends on the viscosity and the aspect ratio of the filament. Here we study the collapse of an axisymmetric liquid filament analytically and with a numerical model. We find that a long, high viscous filament can only break up due to the Rayleigh-Plateau instability, whereas a low viscous filament can break up due to end-pinching. The theory shows quantitative agreement with recent experimental findings by Castréjon-Pita et al., PRL 108, 074506 (2012).

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