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**Rayleigh-Plateau instability of slipping viscous filaments in v-shaped grooves** MARTIN BRINKMANN, TAK SHING CHAN, RALF SEEMANN, Experimental Physics, Saarland University — Since the seminal works of Rayleigh and Plateau on the break-up of free-standing liquid jets, a large number of studies have addressed capillary instability of cylindrical interfaces in various settings. Here, we report the numerical results of a linear stability analysis of cylindrical liquid filament wetting v-shaped grooves employing a boundary element formalism. It is found that slip affects the wavelength $\lambda^{\max}$ of the fastest growing mode whenever the transverse dimension $W$ of the filaments is comparable, or smaller than the Navier slip-length $B$. The corresponding timescale of the decay, $\tau^{max}$, grows logarithmically with increasing $B/W$. In the opposite limit $B/W \ll 1$, however, $\lambda^{max}$ grows unboundedly with increasing $B/W$ while $\tau^{max}$ saturates to a finite lower bound, similar to the situation observed for free-standing viscous liquid cylinders in the absence of inertial effects. Long wavelength approximations of the flows for $B/W \ll W$ and $B/W \gg 1$ are in good agreement with the numerical results only for contact angles $0 < \theta - \psi \ll 1$ where the neutrally stable wavelength $\lambda^* < \lambda^{max}$ is large compared to the transverse filament dimension $W$.

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