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Rayleigh-Plateau instabilities on Drop on Demand Jetting CRISTINA RODRIGUEZ-RIVERO, University of Cambridge, JOSE RAFAEL CASTREJON-PITA, Queen Mary University of London, IAN HUTCHINGS, University of Cambridge — The fate of liquid filaments is a complex phenomenon; a filament can either collapse into a single drop or break-off into multiple droplets. The final result depends on the liquid viscosity, the shape and the inner dynamics of the filament. In addition, it has been suggested that Rayleigh-Plateau instabilities also play a role in the breakup. In this work we use high-speed imaging and the adequate instrumentation to control the breakup of liquid filaments generated from a Drop on Demand system. In these experiments, we induce a controlled perturbation, matching the optimal wave number from the Rayleigh-Plateau model, on liquid filaments produced by a droplet generator. Our setup can control the wave number, duration and time of the perturbation. Our results found that both the amplitude and frequency of the Rayleigh-Plateau instability are critical on the break-off behavior. This work was supported by the UK EPSRC (Grant EP/H018913/1) and the Impact Acceleration grant from the University of Cambridge (EP/K503757/1).

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