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On the lifetimes of evaporating droplets STEPHEN WILSON, JUTTA STAUBER, BRIAN DUFFY, University of Strathclyde, Glasgow, UK, KHELLIL SEFIANE, University of Edinburgh, Edinburgh, UK — The evaporation of a fluid droplet on a solid substrate is a practically important problem which has been the subject of considerable research in recent years, much of it motivated by a range of technological applications, such as the application of pesticides to plants, DNA microarray analysis, inkjet printing, micro-fabrication, and spray cooling. In particular, the lifetime of a fluid droplet is not only of fundamental scientific interest, but is also important in a number of technological applications, such as inkjet printing and spray cooling applications (in which shorter droplet lifetimes are often needed) and the application of pesticides to plants (in which longer droplet lifetimes are often needed). In this talk we will analyse the lifetimes of fluid droplets evaporating in a variety of modes and, in particular, show that the widely believed folklore that the lifetime of a droplet is always longer than that of an identical droplet evaporating in the constant radius (i.e. pinned contact line) mode and shorter than that of an identical droplet evaporating in the constant angle mode is not, in general, true.

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