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The Effect of Substrate Conductivity on the Evaporation of a Fluid Droplet[1] STEPHEN WILSON, GAVIN DUNN, BRIAN DUFFY, University of Strathclyde, SAMUEL DAVID, KHELLIL SEFIANE, University of Edinburgh —
The evaporation of a fluid droplet is of fundamental importance in a wide range of practical applications, including ink-jet printing, spray cooling and DNA mapping, and has been the subject of growing research activity in recent years. A mathematical model for the evaporation of an axisymmetric sessile droplet whose contact line is pinned by surface roughness (or other) effects is developed and analysed. In particular, our model generalises the work of earlier authors to include the effect of substrate conductivity, and the theoretical predictions we obtain are in excellent agreement with the results of recent physical experiments performed using a variety of substrates.

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