Breakup of an electrified jet in an AC field[1] DEMETRIOS PAPA-
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College London — We study the axisymmetric break-up and satellite formation of
slender jets subjected to time-dependent electric fields. The jet is surrounded by a
concentrically-placed cylindrical electrode with an oscillating voltage; the annular
fluid is assumed to be hydrodynamically passive. We use the long-wave approxi-
mation to derive coupled evolution equations for the interface position and axial
velocity component, which account for electrostatic forcing. Numerical solutions of
these equations permit the study of the effect of various forms of the electrode poten-
tial time-dependence on the dynamics. Our results indicate that it may be possible
to use the AC field to control the number of satellites accompanying breakup as well
as their size.

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Date submitted: 04 Aug 2010   Electronic form version 1.4