

Abstract Submitted  
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**Global stability analysis of electrified jets**<sup>1</sup> JAVIER RIVERO-RODRIGUEZ, MIGUEL PÉREZ-SABORID, Universidad de Sevilla — Electrospinning is a common process used to produce micro and nano polymeric fibers. In this technique, the whipping mode of a very thin electrified jet generated in an electro-spray device is enhanced in order to increase its elongation. In this work, we use a theoretical Eulerian model that describes the kinematics and dynamics of the midline of the jet, its radius and convective velocity. The model equations result from balances of mass, linear and angular momentum applied to any differential slice of the jet together with constitutive laws for viscous forces and moments, as well as appropriate expressions for capillary and electrical forces. As a first step towards computing the complete nonlinear, transient dynamics of the electrified jet, we have performed a global stability analysis of the forementioned equations and compared the results with experimental data obtained by Guillaume et al [2011] and Guerrero-Millán et al [2014].

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