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Modeling of liquid electrolyte films on non-uniformly charged solid substrates MAHNPRIT JUTLEY, Southern Methodist Univ, VLADIMIR AJAEV, Southern Methodist University — We consider a thin electrolyte film on a solid substrate characterized by a space-dependent electrical charge density. Using the Debye-Hückel equation to model the electrostatic potential and the Navier-Stokes equations for fluid flow, we consider both steady-state interface shapes and their stability resulting from small perturbations of arbitrary wavelength. Calculations are carried out by two different approaches: Fourier expansion of all terms is used and the corresponding coefficients of the first order correction to the interface shape are found, and, secondly, an evolution equation is obtained within the framework of a lubrication-type model. Stability analysis of the linearized problem is conducted.

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