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Effect of film thickness on EHD-driven instability of superimposed flows PAYAM SHARIFI, ASGHAR ESMAEELI, Southern Illinois University at Carbondale — This study aims to investigate the effect of fluid layer thickness on EHD-driven instability of superimposed fluids using Direct Numerical Simulations (DNS). The geometric setup consists of two fluids having different electrical properties confined between two horizontal electrods, where the lighter fluid is overlaid on top of the heavier one. A front tracking/finite difference scheme is used, in conjunction with Taylor's leaky dielectric model, to solve the governing electrohydrodynamics equations in both fluids at finite Reynolds numbers and the dynamics of the interface and incipience of instability is investigated as a function of the thickness of the lower layer.

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