

Abstract Submitted  
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**Dynamics of a falling film in the presence of surfactants<sup>1</sup>** ANTONIO PEREIRA, SERAFIM KALLIADASIS, Department of Chemical Engineering, Imperial College London, London SW7 2AZ, UK, PATTERN FORMATION AND NONLINEAR DYNAMICS GROUP TEAM — We investigate the dynamics of a falling film in the presence of surfactants. As a first step we consider insoluble surfactants thus ignoring diffusion from the bulk and desorption to the gas phase. We utilize an integral-boundary-layer approximation of the momentum and concentration equations and free-surface boundary conditions. We construct bifurcation diagrams for single-hump solitary wave solutions and we show that for vanishing Marangoni numbers the surfactants concentration becomes singular. The singularity appears at the front stagnation point of a solitary pulse due to accumulation of surfactants.

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