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**Marangoni Driven thin film flow in the presence of non-uniform precursors** ANAND JAYARAMAN, Math Department, Duke University, Durham, NC - 27708, SHOMEEK MUKHOPADHYAY, Physics Department, Duke University, TOM WITELSKI , Math Department, Duke University, ROBERT BEHRINGER, Physics Department, Duke University — It is well known that a moving contact line on a dry surface is incompatible with the no slip boundary condition and we need a thin precursor layer to relieve the stress singularity . The presence of a precursor layer has been verified in some of the recent experiments and in this study we look at the effect of a thin film driven by Marangoni forces when the precursor layer is varied transverse to the flow direction. We deposit a step like precursor layer and follow the film dynamics interferometrically. Numerical results and analytic arguments are presented which show the evolution of a characteristic dip like structure and the fact that the asymptotic thickness is independent of the far field precursor layer. The velocity is strongly effected by the structured precursor layer. This work was supported by NSF Career Grant 0239125.

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