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Laminar flow over a thin film THOMAS WARD, PAUL TROUPE, Iowa State University — Thin film deformation that is driven by an external laminar flow over a flat plate is considered using both theoretical and computational analysis. To perform theoretical analysis we utilize the Blasius boundary layer solution to develop the thin film evolution equation. Non-dimensionalization of the resulting film evolution equations yields two dimensionless parameters, the Weber and Reynolds numbers. The film thickness is computed for a wide range of both Weber (> 1) and Reynolds (> 1) numbers using standard disjoining pressure models. The scaling and computed results suggest strong dependence on the Reynolds number, where in the limit of large Reynolds number the evolution equations are self similar.

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