Harvey Mudd College
Mathematics

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Results of Citation Search

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References

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[2] A. L. Bertozzi. Symmetric singularity formation in lubrication-type equations for interface motion. *Siam Journal On Applied Mathematics*, 56:681–714, 1996. Examines locally symmetric singularities of the thin film type equation $h_t + h^n h_{xxxx} = 0$, and proves that finite-time rupture is impossible for sufficiently large n. Also illustrates the problem by showing that numerical simulation of singularities concide with theoretical prediction.

[3] Andrea L. Bertozzi. The mathematics of moving contact lines in thin liquid films. *Notices Amer. Math. Soc.*, 45(6):689–697, 1998. Describes the behavior of interfaces in the fourth-order analogue of the porous media equation, in particular the familiar thin film equation. Analyses finite-time rupture behavior and the possibility of a critical exponent above which the film ruptures and below which it does not, and describes numerical schemes for the solution of general lubrication equations.

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Presents numerical schemes for solving the thin film equation which preserve positivity, and demonstrates stability and convergence, i.e. no false rupture, of these schemes for positive solutions of the equation.