

Abstract Submitted
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Nonlinear Analysis of Dewetting of a Two-Layer Thin Liquid Film¹ LAEL FISHER, ALEXANDER GOLOVIN, Northwestern University — Non-linear analysis of dewetting of a two-layer thin liquid film on a solid substrate is performed. It is shown that, due to the coupling of the van der Waals forces in the two liquid layers the film can undergo either rupture or spinodal decomposition into drops divided by wetting layers, thus exhibiting an autophobic behavior. A system of coupled nonlinear evolution equations describing the shape of the two interfaces in the lubrication approximation is analysed and solved numerically. Numerical solutions confirm the possibility of an autophobic behavior. The effect of surfactant adsorption at the interface between the liquid layers is also analysed.

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