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Nonnegative weak solutions for a degenerate system modeling the spreading of surfactant on thin films

Depending on the parameter range, we prove local and global in time existence of non- negative weak solutions to a coupled system of two degenerate parabolic equations. This system models the spreading of an insoluble surfactant on a thin liquid film. The model includes gravity, surface tension, capillarity effects, and van der Waals forces. The surface diffusion coefficient is not assumed constant and depends on the surfactant concentration.

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