Pattern formation in thin film evolution equations for complex fluids MARKUS WILCZEK, SVETLANA V. GUREVICH, UWE THIELE, Institute for Theoretical Physics, University of Muenster, Germany — The description of thin layers of complex fluids like suspensions and solutions is often based on so-called thin film evolution equations which are derived from basic hydrodynamic equations by a long-wave approximation. We present a systematic approach to construct such models in a gradient dynamics formulation for a free energy accounting for wettability and capillarity. We propose extensions in this framework and apply it to dewetting and dip-coating problems. Using these models, we study pattern formation phenomena in Langmuir-Blodgett transfer experiments.

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