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Dynamics of apparent contact lines formed by rapidly moving menisci ROUMEN TSEKOV, A.N.Frumkin Institute of Physical Chemistry, Russia, VLADIMIR AJAEV, Southern Methodist University, OLGA VINOGRADOVA — When a bubble is pressed against a solid wall, an apparent contact line is formed in the region where the meniscus transitions to the equilibrium wetting film. The details of this transition for both stationary and slowly moving menisci have been investigated by many researchers. However, when the bubble is pushed towards the wall sufficiently fast, a different physical picture emerges. Landau-Levich-type trailing films behind the menisci are playing a significant role in the local dynamics of the apparent contact line. Thickness of these films can be significantly larger than that of the wetting films, and is dependent on the capillary number. The dynamics of the local flow then depends on the interactions between the Landau-Levich type film, the ultra-thin wetting film, and the macroscopic meniscus. We propose a model that describes these interactions. Simulation results are discussed with emphasis on the prediction of macroscopically measurable quantities, such as the position of the apparent contact line, as a function of time.

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