Sharp Interface Limit with Contact Angle: Asymptotic Expansions "vs" Relative Entropy Method

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In this talk we consider the sharp interface limit for the Allen-Cahn equation with a non-linear Robin boundary condition in a bounded smooth domain. The limit problem is given by Mean Curvature Flow with constant contact angle. To show convergence, two different methods for sharp interface limits - the asymptotic expansion method by de Mottoni, Schatzman and the relative entropy method by Fischer, Hensel, Laux, Simon - are introduced and compared. Both results are applicable as long as a sufficiently smooth solution to the limit problem exists, and are joint work with H. Abels (Regensburg) and S. Hensel (Bonn), respectively.