



Mathematics and CS Seminar

Sharp Interface Limit for the Allen-Cahn Equation with a Contact Angle

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Host: Julian Fischer

We consider the sharp interface limit of the Allen-Cahn equation, when a parameter $\epsilon > 0$ that is proportional to the thickness of the diffuse interface tends to zero, in a two dimensional bounded domain with Neumann boundary conditions. We prove convergence of the solutions of the Allen-Cahn equation to solutions of the sharp interface limit, which is the mean curvature flow with a 90 degree contact angle, provided the limit problem possesses a smooth solution on a certain time interval. To this end we construct a suitable approximation of the Allen-Cahn equation, using three levels of the terms in the formally matched asymptotic calculations, and estimate the difference with the aid of a suitable spectral estimates of the linearized Allen-Cahn operator. Moreover, we will discuss recent extensions of this results e.g. to the Navier-Stokes/Allen-Cahn system or the Stokes/Cahn-Hilliard system. This is a joint-work with Maximilian Moser.

Thursday, July 4, 2019 04:00pm - 06:00pm

IST Austria Campus Heinzl Seminar Room / Office Bldg West (I21.EG.101)



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