

DERIVATIONS OF MOTION BY MEAN CURVATURE AND STEFAN PROBLEM FROM GLAUBER-KAWASAKI DYNAMICS

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We derive (1) motion by mean curvature and (2) two-phase Stefan free boundary problem directly from particle systems on a periodic square lattice called Glauber-Kawasaki dynamics. For (2), we consider a system with two components. We use the relative entropy method with a control on additional diverging factors. At PDE level, these are known as a fast reaction limit, in particular (1) is related to the sharp interface limit for Allen-Cahn equation, while (2) is related to the spatial segregation limit for a competition-diffusion system. These are joint works with K. Tsunoda for (1), and A. De Masi, E. Presutti, M.E. Vares for (2).