

Diffusion on a moving domain

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The main goal is to prove the existence of a solution to the problem, and its convergence to a travelling wave profile. We start by proving the existence of this travelling wave solution. Then, we compute a priori bounds, using the decrease of free energies. We write a numerical scheme to approximate the system. It allows us to represent the convergence towards the travelling wave. Using the monotonicity of the numerical scheme we then prove some a priori estimates on the numerical solution. Finally, these estimates enable us to prove the existence of a solution to our scheme.