SOME SOLUTIONS TO THE CAHN-HILLIARD EQUATION AND CONSTANT MEAN CURVATURE SURFACES

Matteo Rizzi Centro de Modelamiento Matemático (UMI 2807 CNRS), Universidad de Chile, Casilla 170 Correo 3, Santiago, Chile.

mrizzi1988@gmail.com

Abstract. In the talk I will present the construction of a family $\{u_\varepsilon\}$ of solutions to the Cahn-Hilliard equation

$$-\varepsilon\Delta u_\varepsilon = \varepsilon^{-1}(u_\varepsilon - u_\varepsilon^3) - \ell_\varepsilon, \qquad \ell_\varepsilon \in \mathbb{R},$$

whose zero level set is prescribed and approaches, as $\varepsilon \to 0$, a given complete, embedded, k-ended constant mean curvature surface. It is a joint work with Michal Kowalczyk. Moreover, I will present some classification results, dealing with properties such as boundedness, monotonicity and radial symmetry.