
Singular limit of Allen–Cahn equation with constraints and dynamic boundary condition and its Lagrange multiplier

Noriaki Yamazaki^{*1}, Mohammad Hassan Farshbaf-Shaker², and Fukao Takeshi³

¹Department of Mathematics, Faculty of Engineering Kanagawa University – 3-27-1 Rokkakubashi, Kanagawa-ku, Yokohama, 221-8686, Japan

²Weierstrass Institute for Applied Analysis and Stochastics – Mohrenstrasse 39, 10117 Berlin, Germany

³Department of Mathematics, Kyoto University of Education – 1 Fujinomori, Fukakusa, Fushimi-ku, Kyoto, 612-8522, Japan

Abstract

We consider an Allen–Cahn equation with constraints and dynamic boundary condition. Our constraint is a subdifferential of an indicator function on the closed interval $[-1,1]$, which is the multivalued function. In this talk we call the pair of elements of constraint a Lagrange multiplier to our problem. Then, we give the characterization of the Lagrange multiplier to our problem. Moreover, we consider the singular limit of our system as the parameter goes to 0. Then, we clarify the limit of the solution and the Lagrange multiplier to our problem as the parameter goes to 0.

^{*}Speaker