



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON PDE

Axially Symmetric Solutions of Allen-Cahn Equation

By

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Abstract

In this talk, I will present recent results on axially symmetric solutions of Allen-Cahn equation. For the existence results, we show in three dimensional Euclidean space the existence of a complete family of axially symmetric solutions with a range of logarithmic growth rates, which may be regarded as the analogue of the family of catenoids and hence called two-end solutions. Nonexistence of two-end solution with a small growth rate is also shown, which differs from the theory of minimal surfaces. For the classification of axially symmetric solutions with finite morse index, we show in dimension three that such solutions have finitely many ends. Furthermore, the solution has exactly two ends if its Morse index equals 1. It is also shown that there does not exist such a solution in dimensions between 4 and 10.

Date : 09 January 2020 (Thursday)

Time : 11:00am – 12:00noon

**Venue : Room 3472, Academic Building
(Lifts 25-26), HKUST**

All are Welcome!