國立交通大學應用數學系
學術演講公告

主講人：謝天長博士 (理論中心)

講　　題：Ground State Patterns and Phase Transitions of Spin-1

　　　　　　Bose-Einstein Condensates via Γ-Convergence Theory

時　　間：106 年 3 月 7 日(星期二) 下午 2:00 –3:00

地　　點：(光復校區) 科學一館 223 室

茶　　會：當天下午 1:30 (科學一館 205 室)

Abstract

In this talk, I will introduce an analytic theory　for the ground state patterns and their phase transitions　for　spin-1 Bose-Einstein condensates　on a bounded domain in the presence of　a uniform magnetic　field.　Within the Thomas-Fermi approximation, these ground state patterns are composed of four basic states: magnetic state, nematic state, two-component state and three-component state, separated by interfaces.　A complete phase diagram of the ground state patterns are found analytically with　different quadratic Zeeman energy q and total magnetization M　for both ferromagnetic and antiferromagnetic systems.　Using the Γ-convergence technique, it is found that the　semi-classical limits of these ground states minimize an energy functional which consists of interior interface energy plus a boundary contact energy. As a consequence, the interface between two different basic states has constant mean curvature, and the contact angle between the interface and the boundary obeys　Young's relation.

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