

Vortex Condensate Solutions for the Self-Dual Maxwell-Chern-Simons $U(1)$ Model

Zhi-You Chen

Department of Mathematics

National Changhua University of Education

Abstract

In this talk, we consider the coupled equations arising from the self-dual Maxwell-Chern-Simons $U(1)$ model. We prove the existence of topological solutions and non-topological solutions for any ratio of the Chern-Simons mass scale over the electric charge. Moreover, the uniqueness of topological solutions was obtained. In addition, we also establish the structure of the existence of condensate solutions under the Chern-Simons parameter and the electric charge.