

Joint Seminar – CQSE, CTP, & CASTS

2019
Oct. 4, Friday

TIME Oct. 4, 2019, 2:30~3:30pm
TITLE Tying knots in liquid crystals
SPEAKER Dr. Jung-Shen Benny Tai
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PLACE Rm716, CCMS & New Physics Building, NTU

Abstract

Throughout the history, knots have emerged as important elements for practical, spiritual and artistic needs. In addition to shoelaces or knotted strings, the topological nature of knots in fields have also fascinated physicists and mathematicians, including Gauss, Kelvin and Maxwell. Liquid crystal, an ordered fluid at the heart of modern display technology, provide a perfect platform for the study of field configurations with nontrivial topology. In liquid crystals, knotted fields and topological solitons, similar to the ones arising in field theories ranging from condensed matter to nuclear physics and cosmology, can be generated, manipulated, and structurally analyzed. In this presentation, I will discuss various kinds of 2D and 3D solitonic field configurations in liquid crystals, including their stability, response to external fields, and their self-organization into 3D adaptive crystals, as well as how they could enable multi-stable display modes and data storage devices.

