



JFI SEMINAR



Christos Panagopoulos

**Nanyang Technological University
Singapore**



Updates:



Thursday, June 9, 2022
1:00 PM



KPTC 206

Zoom Link: <https://uchicagogroup.zoom.us/j/97036491206> **pwd=a1hFSXVZbFJXSThFVFczcG9Db09Qdz09**
Meeting ID: 970 3649 1206
Passcode: 822278

Topological Solitons in Chiral Quantum Matter

Abstract:

Topological solitons and quantum mechanics have been intertwined for the past 60 years. even before the term soliton had been coined, abrikosov's theory predicted the formation of vortices in the phase field of superconductors, an exemplar exposition of macroscopic quantum coherence. recent work shows that solitons are in fact a timely and promising platform for quantum operations. in the first part of the talk, i will demonstrate the viability of using spin topology to influence a superconductor at selective length scales. this includes adaptable recipes for fluxonics and chiral superconductivity, as well as quantum processes such as non-perturbative, non-contact majorana braiding. in the second part, i will introduce a new class of building blocks for realizing quantum logic elements. namely, nano-skyrmions in triangular magnets developing quantized helicity excitations with well-separated energy levels and distinct out-of-plane magnetizations.

Host: Kathy Levin, levin@jfi.uchicago.edu **Assistance:**

Brenda Thomas (2-7156)