



Contribution ID: 17

Type: **not specified**

Quantum Nucleation of Chiral Soliton Lattice

Wednesday, 29 March 2023 12:10 (20 minutes)

The Chiral Soliton Lattice (CSL) is a lattice structure composed of pion or axion domain walls aligned in parallel at equal intervals, which is energetically stable in the presence of a background magnetic field and a finite (baryon) chemical potential due to the topological term originated from the chiral anomaly. In this talk, I will discuss how to describe its formation by the quantum tunneling. I will show that CSL formation is promoted when the magnetic field strength and the chemical potential of the system is slightly larger than the scale of the axion decay constant.

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Session Classification: Morning session-2