



Contribution ID: 236

Type: **Parallel Talk**

Analysis on phases in the Gross-Neveu Model on the lattice with shape-based clustering method

Friday, 4 August 2023 09:00 (20 minutes)

In low temperature and high density region possible interesting phases are discussed from effective theories which exhibit the same symmetries as QCD, chiral symmetry.

They are pion condensation, color super conducting phases and inhomogeneous chiral condensation.

For spatial dependence of inhomogeneous chiral condensation, various kinds of structures are discussed; chiral density wave, kinks as solitonic solutions. Usually the investigations are limited to specific ansatz such as a selected set of Fourier modes. One of pioneering works is carried out without using ansatz for spatial structure of chiral condensation. Also, lattice calculation of the 1+1 dimensional Gross-Neveu model is performed. Here, we apply a shape-based clustering method, which is unsupervised learning, to estimate the spatial dependence of chiral condensation in configurations of the 1+1 dimensional Gross-Neveu model on the lattice. Furthermore we demonstrate to classify the phases of the 1+1 dimensional Gross-Neveu model on $T - \mu$ plane, using the shape-based clustering method.

Topical area

QCD at Non-zero Density

Primary authors: NONAKA, Chiho; HORIE, Keita (ChudenCTI Co.,Ltd.)

Presenter: NONAKA, Chiho

Session Classification: QCD at Non-zero Density