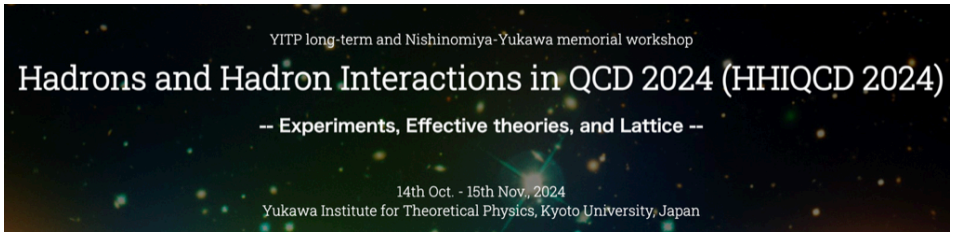

Contribution ID: **23** Type: **4th week (Nuclear matter under extreme conditions)**

Possibility of phase transition on superfluid vortex under Higgs-confinement crossover

Friday, November 8, 2024 12:00 PM (30 minutes)

At finite densities of three-flavor QCD, a hadron (confinement) superfluid phase is expected to be realized at low densities, and a color superconducting (Higgs) phase at high densities. It is not well understood whether these two phases are connected with or without a phase transition. In this talk, we consider the Higgs-confinement transition with superfluidity in a $\mathrm{U}(1) \times \mathrm{U}(1)$ lattice model is a simple model. We found that a phase transition occurs on a superfluid vortex, although the bulk system does not exhibit a phase transition. We confirm this phase transition through analytical calculations using weak/strong coupling expansion and Monte Carlo simulations. We also discuss possible scenarios for QCD.

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Session Classification: Seminar (4th week)