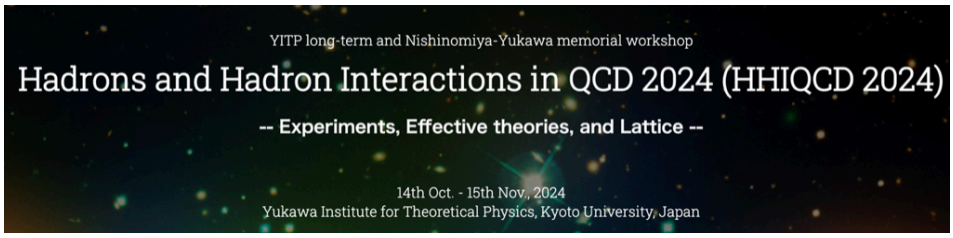

Contribution ID: **104** Type: **1st and 2nd weeks (Hadron structure and interactions)**

One-pion exchange potential in a strong magnetic field

Thursday, October 17, 2024 12:00 PM (30 minutes)

The properties of QCD matter in a strong magnetic field have attracted much attention because of their relevance to the physics of relativistic heavy-ion collisions and magnetars. For example, the effects of magnetic fields are intensely studied in both single-body and many-body problems, such as modifications of the hadron mass spectrum and the QCD phase diagram. On the other hand, recent progress in lattice QCD and femtoscopy has enabled more direct investigations of hadron-hadron interactions. Given these developments, it is now timely to investigate the hadron-hadron interaction in the presence of strong magnetic fields.
In this study, we analyze how a strong magnetic field affects the long-range behavior of the nuclear force, specifically the one-pion exchange potential. Based on chiral perturbation theory in magnetic fields, we demonstrate that the potential between the proton and neutron is strongly modified, acquiring anisotropy due to charged pion exchange.

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Session Classification: 1-day Workshop (1st week)