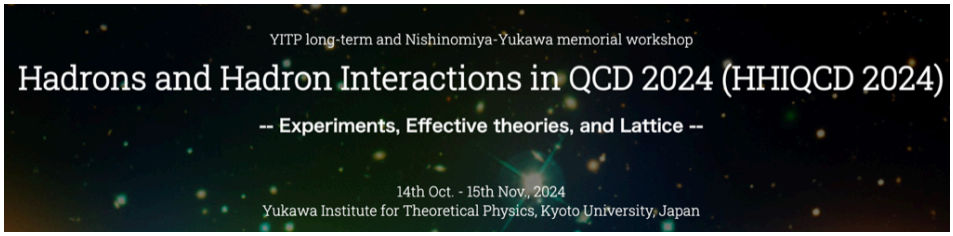

Contribution ID: **73** Type: **1st and 2nd weeks (Hadron structure and interactions)**

Gravitational form factors and Mechanical properties of nucleon

Friday, October 25, 2024 11:00 AM (1 hour)

The gravitational form factors of the proton provide essential information on its mechanical structure such as its mass, spin, mechanical pressure, and shear force. In the current talk, we present a series of recent results for the flavor decomposition of the gravitational form factors~(GFFs) of the proton in a pion mean-field approach or the chiral quark-soliton model. We analyze problems arising from the flavor decomposition of the mass distribution, as evidenced through the non-conserved $\bar{c}(q^2)$ form factor of the nucleon. We discuss subtle points related to the twist-2 and twist-4 contributions to the flavor-decomposed masses and $\bar{c}$ form factors. We study not only the decomposition of the total angular momentum into the orbital angular momentum and intrinsic spin, but also its flavor decomposition. We then examine the intricate interplay between the D-term and $\bar{c}$ form factors and their collaborative impact on the stabilization of the nucleon system. Questioning the assumption of'large N_c blindness" concerning $D^{u-d} \sim 0$ in a recent experimental analysis, we compute it within both the flavor SU(2) and SU(3) framework. We conclude that such an assumption finds justification predominantly within the framework of flavor SU(3) symmetry.

Primary author: KIM, Hyun-Chul (Inha University)

Presenter: KIM, Hyun-Chul (Inha University)

Session Classification: Seminar (1,2 week)