Contribution ID: **26** Type: **not specified**

First lattice calculations of the threshold electroweak pion production from a nucleon

Monday, 3 March 2025 16:45 (45 minutes)

Nucleon pion production is an important process to study the low energy features, especially the chiral behaviours of QCD. The process receive strong attention since 1950s from experimental side, and would still play a crucial role to control the systematic effects in future neutrino-nucleus scattering experiments. Theoretically, though Chiral Perturbation Theory (Chipt) has given fruitful results, a first principle evaluation is still of great significance to understand QCD dynamics and to systematically control the errors. In this work, we present the first lattice calculations of both electro-production and weak-production process from a nucleon utilizing two domain wall fermion ensembles at physical pion mass. We analyze all the possible systematic effects, and the results show good consistency with Chipt at low energy region. The work shed light on future lattice calculations on electroweak pion production process.

Presenter: ZHANG, Z.