Contribution ID: **136** Type: **2.Parallel session talk**

Frustrated chiral dynamics in an interacting triangular ladder

Tuesday, 24 September 2024 15:30 (30 minutes)

Quantum matter interacting with gauge fields, an outstanding paradigm in modern physics, underlies the description of various physical systems. Engineering artificial gauge fields in ultracold atoms offers a highly controllable access to the exotic many-body phenomena in these systems. Here we implement a triangular flux ladder in the momentum space of ultracold 133Cs atoms with tunable interactions. We reveal how the competition between interaction and flux in the frustrated triangular geometry gives rise to flux-dependent localization and biased chiral dynamics. For the latter in particular, the symmetry between the two legs is dynamically broken, which can be attributed to frustration. We then characterize typical dynamic patterns using complementary observables. Our work opens the avenue toward exploring correlated transport in frustrated geometries, where the interplay between interactions and gauge fields plays a key role.

Primary author: LI, Yuqing (山西大学)

Presenter: LI, Yuqing (山西大学)

Session Classification: Parallel 7：Interdisciplinary aspects of few-body physics and techniques

Track Classification: Interdisciplinary aspects of few-body physics and techniques