Contribution ID: **19** Type: **Contributed**

Isoscalar axial-vector bottom-charm tetraquarks from QCD

Tuesday, 6 June 2023 16:50 (20 minutes)

The increasing number of discovered heavy quark exotic hadrons call for immediate theoretical investigations based on first principles. Our study focuses on tetra-quark states made up of a bottom and charm quark in the axial-vector (1^+) channel with isospin I=0, using Lattice Quantum Chromodynamics.

These computations were conducted on the state-of-the-art MILC ensembles using dynamical up/down, strange, and charm quark fields implemented with a highly improved staggered quark action. The valence quarks were implemented using an overlap action, with quark masses ranging from light to the charm sector, while the evolution of the bottom quark was studied within a non-relativistic QCD framework. We observe strong evidence of an energy level beneath the elastic threshold, which imply an attractive interaction between the bottom and charm mesons, indicating the possible existance of bound charmed-bottomed tetra-quarks.

Primary authors: RADHAKRISHNAN, Archana (Tata Institute of Fundamental Research, Mumbai); MATHUR, Nilmani (TIFR); MADANAGOPALAN, Padmanath (Helmholtz Institut Mainz)

Presenter: RADHAKRISHNAN, Archana (Tata Institute of Fundamental Research, Mumbai)

Session Classification: Heavy meson spectroscopy

Track Classification: Heavy meson spectroscopy