Contribution ID: **228** Type: **Flash-talk and poster/pre-recorded talk**

Diquark Parton Distribution Functions for nucleons from light-front holography

Thursday 15 July 2021 19:34 (2 minutes)

The light-front holography or light-front AdS/QCD is defined as a connection between light-front QCD and the description of hadronic modes on AdS spacetime. This relation, inspired in the AdS/CFT correspondence, has shown improvements in analytic solutions in the hadron physics regime.
We are motivated by the light-front AdS/QCD prediction on a general form of two particle bound state wave function inside nucleons. Diquark degrees-of-freedom within the framework of a quark model have been suggested also in the baryon structure in lattice-QCD as well as in phenomenological resources to study observed data.
This fact has motivated studies of nucleon models considering diquarks in their valence structure, the so called quark-diquark nucleon models. One of these studies has been shown light-front wave functions QCD matched with light-front AdS/QCD predictions. From such result, followed a model that contemplates the scale evolution of the Parton Distribution Functions (PDFs) for a quark-diquark nucleon model using scale dependent parameters following the DGLAP evolution.
Based on these results, we have performed a calculation of the PDF parameters constructed on the so called AdS/QCD quark-diquark nucleon model from the available data from NNPDF collaboration for u and d quarks, in order to get the unpolarized PDFs for the scalar and axial-vector diquarks in protons and neutrons. The PDFs obtained are expected to be used in nucleon and heavy-ion collision simulations to study the role of valence-diquark hard-processes on hadron production.

Preferred track

Hadron Structure

Primary author: RODRIGUEZ, Benjamin (Saint Petersburg Polytechnic University)

Co-author: Prof. BERDNIKOV, Yaroslav A. (St. Petersburg Polytechnic University)

Presenter: RODRIGUEZ, Benjamin (Saint Petersburg Polytechnic University)

Session Classification: Poster Session