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Definite Orbital Angular Momentum Nucleon GPD Contributions via Light Front Wave Function Overlap

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While hadronic structure is experimentally probed by processes such as DIS and DVCS, both lattice and continuum techniques are employed to corroborate such results from a theoretical perspective. On the continuum side, the Fadeev equations provide a fully covariant approach to three body interactions convenient for describing three quark hadronic states. However, the four-spacetime-dimensional nature of the corresponding Fadeev wave functions precludes a probabilistic interpretation, encouraging our use of their 3-spacetime-dimensional light cone projections, Light Front Wave Functions (LFWFs). An intuitional advantage of LFWFs is their role as coefficients in Fock expansions of hadronic states. We first define nucleon Fadeev wave functions in terms of off-diagonal nucleon matrix elements, and subsequently express the corresponding definite orbital angular momentum (OAM) nucleon LFWFs. With these definite quark helicity LFWFs in hand we calculate GPDs as linear combinations of their overlaps, and isolate definite OAM contributions to nucleon GPDs, PDFs, Form Factors (FFs) and the electric nucleon radius. Looking forward, this work will allow us to map dynamical effects underlying the computation of Fadeev wave functions to the multimensional structure of the nucleon.

Declaration

I certify that I have checked that I am authorised to submit the abstract with the listed co-authors with their current affiliations

Change of Speaker

I understand that change of speaker is allowed provided that no participant gives more than one talk. Otherwise, we will ask the speaker to choose between one or the other abstract to be presented.

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