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Internal stucture of the pion inspired by AdS/QCD correspondence

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The Light-Front Wave Functions (LFWFs) represent a perfect starting point for describing the partonic structure of hadrons.
In this work we use the results for the LFWFs of the pion coming from the AdS/QCD correspondence, in the context of a soft-wall model. We study the parton distribution function (PDF) and the electromagnetic form factor (FF) of the pion and for the first time we implement the analysis of the unpolarized transverse momentum dependent parton distribution (TMD) $f_1(x, \mathbf{k}_\perp)$.
The correspondence has also been used to investigate the transition of the QCD coupling from high to low scales. In our analysis we obtain a value for the physical mass scale parameter κ which can also be used to calculate the QCD effective coupling predicted by this approach.

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