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Study of pseudoscalar mesons (π^+ , K^+) with a symmetric vertex in the light front formalism

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In this study, we investigate the electromagnetic form factors, $F_{X^{0-}}^{em}$, decay constants, $f_{X^{0-}}$, and charge radii, $\langle r_{X^{0-}} \rangle$, where $X^{0-} = \pi^+$ or K^+ , for pion and kaon within the frame work of light-front field theory formalism using symmetric vertex function as a quark-meson interaction vertex. The above mentioned observables are evaluated for the plus component of the electromagnetic current, J^+ , in the Breit frame while, both, the valance and the non-valance contributions are taken into account. We also study the sensitivity of $F_{X^{0-}}^{em}$, $f_{X^{0-}}$ and $\langle r_{X^{0-}} \rangle$ on the model's parameters, namely, quark masses, $m_u = m_d$, $m_{\bar{s}}$, and on the regulator mass, m_R . It is found that, after fine tuning of regulator mass i.e. $m_R = 0.6$ GeV, the model is suitable to fit the experimental values of $f_{X^{0-}}$ and $\langle r_{X^{0-}} \rangle$ within the theoretical uncertainties, both, for pion and kaon.

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