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Light front approach to axial meson photon transition form factors: probing the structure of $\chi_{c1}(3872)$

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We propose to study the structure of the enigmatic $\chi_{c1}(3872)$ axial vector meson through its $\gamma_L^* \gamma \to \chi_{c1}(3872)$ transition form factor.
We use our recently derived light-front wave function representation of the form factor for the lowest $c\bar{c}$ Fock-state. We found that the reduced width of the state is well within the current experimental bound recently published by the Belle collaboration. This strongly suggests a crucial role of the $c\bar{c}$ Fock-state in the photon-induced production.
Our predictions for the Q^2 dependence can be tested by future single tagged e^+e^- experiments, giving further insights into the short-distance structure of this meson.

The talk is based on
I.Babiarz, R.Pasechnik, W.Schafer and A.Szczurek,
Light-front approach to axial-vector quarkonium $\gamma^*\gamma^*$ form factors,
JHEP 09 (2022), 170
and
I.Babiarz, R.Pasechnik, W.Schafer and A.Szczurek,
Probing the structure of $\chi_{c1}(3872)$ with photon transition form factors,
[arXiv:2303.09175 [hep-ph]].

Collaboration

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