

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

Thursday, June 22, 2023 3:40 PM (20 minutes)

We propose to study the structure of the enigmatic $\chi_{c1}(3872)$ axial vector meson through its $\gamma_L^* \gamma \rightarrow \chi_{c1}(3872)$ 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

Primary author: SCHAFFER, Wolfgang (Institute of Nuclear Physics PAS)

Co-authors: SZCZUREK, Antoni (Institute of Nuclear Physics PAS); BABIARZ, Izabela (Institute of Nuclear Physics PAS)

Presenter: SCHAFFER, Wolfgang (Institute of Nuclear Physics PAS)

Session Classification: Parallel session A1