

Two-photon transitions of charmonia on the light front

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We investigate the two-photon transitions $H_{c\bar{c}} \rightarrow \gamma^* \gamma$ of the charmonium system in light-front dynamics. The light-front wave functions were obtained from solving the effective Hamiltonian based on light-front holography and one-gluon exchange interaction within the basis light-front quantization approach. We compute the two-photon transition form factors as well as the two-photon decay widths for S- and P-wave charmonia, η_c and χ_{cJ} and their excitations. Without introducing any free parameters, our predictions are in good agreement with the recent experimental measurements by BaBar and Belle, shedding light on the relativistic nature of charmonium.

Reference: arXiv:2111.14178 [hep-ph]

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No

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