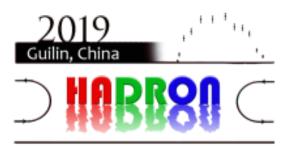
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Spectroscopy of the J/ψ family including charmoniumlike Y states

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Deciphering the complicated structure around 4.2 GeV observed by many experiments, we embed only one charmoniumlike state Y(4220) into the J/ψ family, which plays a role of a scaling point when constructing higher charmonia above 4 GeV. To test this scenario, we provide the detailed decay properties of Y(4220), and predict its partner as $\psi(4380)$ in a 4S-3D mixing scheme, whose evidence is found by analyzing the $e^+e^- \rightarrow \psi(3686)\pi^+\pi^-$ data from BESIII. Utilizing the similar idea, we study another charmoniumlike state $\psi(4415)$ via a 5S-4D mixing scheme, and predict its partner as $\psi(4500)$, whose detailed decay properties are provided to be checked with future experiments at BESIII and BelleII.

Primary authors: Dr MATSUKI, Takayuki (Tokyo Kasei University); Dr LIU, Xiang (Lanzhou University)

Co-authors: Dr CHEN, Dian-Yong (Southeast University); Dr WANG, Jun-Zhang (Lanzhou University)

Presenter: Dr MATSUKI, Takayuki (Tokyo Kasei University)

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