

Observation of new structures in the near threshold $J/\psi J/\psi$ invariant mass spectrum at CMS



Speaker: Jingqing Zhang 张敬庆 (NNU)
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Abstract:

In the QCD theory, hadrons are described as mesons ($q\bar{q}$, integer spin) or baryons (qqq , half integer spin). Exotic hadrons, which are not in $q\bar{q}$ or qqq configuration, are also allowed in QCD theory, and are searched for with great efforts and fruitful results in different experiments since last two decades. CMS analyzed the near threshold $J/\psi J/\psi$ mass spectrum to search for possible full-charm exotic hadrons using the data collected by the CMS detector in 2016-2018. Two new structures as well as the $X(6900)$ were observed in this analysis in the $J/\psi J/\psi$ invariant mass spectrum. Possible interference effect is also explored and a model with the interference between these three structures improved the agreement between data and the fit.

About the speaker:

Dr. Jingqing Zhang obtained his Ph.D. degree in University of Chinese Academy of Sciences (UCAS) in 2014 and then worked as a post-doctor in IHEP and Ruhr University Bochum in 2015-2020. At BESIII experiment, he observed a new structure $X(1840)$ in J/ψ radiative decaying into $3(\pi^+\pi^-)$, and confirmed the existence of the $X(1750)$ and clarified the confusion between the $X(1750)$ and $\phi(1680)$ in a simultaneous observation of these two states. Since 2020, Dr. Jingqing Zhang joined Nanjing Normal University and worked for the $J/\psi J/\psi$ analysis at CMS experiment.