

XVth Quark Confinement and the Hadron Spectrum



Contribution ID: 231

Type: Oral

Study of X(2370) at BESIII

Wednesday 21 August 2024 17:00 (30 minutes)

The self-interacting nature of gluons remains one of the most fascinating characters of QCD. An observation of glueball states will be the ultimate validation of low energy QCD. The radiative decay of the J/ψ meson is a gluon-rich process and is therefore regarded as an ideal place for searching and studying glueballs.

Based on $(10087 \pm 44) \times 10^6$ J/ψ events collected with the BESIII detector, a partial wave analysis of the decay of $J/\psi \rightarrow \gamma K_S^0 K_S^0 \eta'$ is performed and spin-parity of the X(2370) is determined for the first time to be 0^{-+} [PRL.132.181901(2024)]. Besides that, the mass and width of the X(2370) are measured, as well as the corresponding product branching fraction $\mathcal{B}[J/\psi \rightarrow \gamma X(2370)] \times \mathcal{B}[X(2370) \rightarrow f_0(980)\eta'] \times \mathcal{B}[f_0(980) \rightarrow K_S^0 K_S^0]$. The measured properties of X(2370) are consistent with the predictions of the pseudoscalar glueball candidate by lattice QCD calculation. In addition, recent results on the pseudoscalar spectroscopy from BESIII will also be presented, including $J/\psi \rightarrow \gamma KK\pi$ [JHEP 03, 121 (2023)] and $J/\psi \rightarrow \gamma \gamma \phi$ [arXiv:2401.00918].

Primary author: Dr ZHANG, Peng (Institute of High Energy Physics, Chinese Academy of Sciences)

Presenter: Dr ZHANG, Peng (Institute of High Energy Physics, Chinese Academy of Sciences)

Session Classification: Heavy Quarks

Track Classification: C: Heavy Quarks