

Light Hadron Spectroscopy @ BESIII

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Collaboration

BESIII

Abstract content

The unambiguous identification and systematic study of bound states beyond the constituent quark degrees of freedom, e.g., multi-quark states or states with gluonic degrees of freedom (hybrids, glueballs) would provide validation of and valuable input to the quantitative understanding of QCD. Hadron spectroscopy is one of the most important physics goals of BESIII. Since 2009, BESIII has collected 1.3×10^9 J/ψ and 4.5×10^8 of ψ' , which are the world's largest data samples of J/ψ and ψ' from e^+e^- collision. Radiative decays of charmonium provide a gluon-rich environment and are therefore regarded as one of the most promising hunting grounds for gluonic excitations. Significant progress in the light-quark sector have been made with the unprecedented high statistics data sets. Several recent results on light hadron spectroscopy and light hadron decays will be reported, including:

1. Studies of glueballs in J/ψ radiative decays;
2. Observations of $X(1835)$ and $\eta(1475)$ in $J/\psi \rightarrow \gamma\gamma\phi$;
3. Search for 1^{-+} exotic in $\chi_{c1} \rightarrow \eta\pi\pi$;
4. Search for charged-strangeonium Z_s ;
5. Observation of the helicity-selection-rule suppressed decay of the χ_{c2} .

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