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Recent Studies on Multiple-Quark States at BESIII

Tuesday, 24 September 2024 14:00 (25 minutes)

This talk will present three recent studies conducted using data samples collected by the BESIII detector at center-of-mass energies ranging from 3.51 to 4.95 GeV. The investigations encompass hidden-charm, open-charm, and baryon final states. Specifically, the studies include the following: 1) Investigation of $e^+e^- \rightarrow K^+K^- \psi(2S)$, measuring the Born cross-sections and searching for new tetraquark candidates $Z^{\pm}cs$ in the decays $Z^{\pm}cs \rightarrow K^{\pm} \psi(2S)$; 2) Exploration of $e^+e^- \rightarrow D^+sD_s1(2536)^-$ and $e^+e^- \rightarrow D^+sD^*s2(2573)^-$, which reveals absolute branching fractions of $D_s1(2536)^- \rightarrow D^{*0}\bar{K}^-$ and $D^*s2(2573)^- \rightarrow D^0\bar{K}^-$ that challenge predictions based on the assumption of the $D_s1(2536)$ and $D^*s2(2573)$ being dominated by a bare $cs\bar{c}$ component, along with the discovery of intriguing resonant structures in the cross-section line shapes; 3) Examination of $e^+e^- \rightarrow K^+ \Xi^-\Lambda$ (Σ), where the Born cross-sections are measured, and the first evidence of $\psi(4160) \rightarrow K^-\Xi^+\Lambda$ is observed.

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Session Classification: Parallel 2: Hadrons and related high-energy physics

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