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Type: **Talk**

Production of the glueball-like particle X(2370) in $e+e-$ and pp collisions with PACIAE model

Tuesday 3 September 2024 12:40 (20 minutes)

Inspired by the BESIII newest observation of X(2370) glueball-like particle production in $e+e-$ collisions, we study its production in $e+e-$ and proton-proton collisions at $\sqrt{s} = 4.95$ and 13 TeV with a parton and hadron cascade model PACIAE, respectively. In this model, the final partonic state (FPS) and final hadronic state (FHS) are consecutively simulated and recorded. The X(2370) glueball- or tetraquark-state is then recombined by two gluons or four strange quarks $ss\bar{s}\bar{s}$ in the FPS using the quantum statistical mechanics inspired dynamically constrained phase-space coalescence (DCPC) model. The X(2370) molecular-state is recombined by the baryon-antibaryon of $\Lambda-\bar{\Lambda}$, $\Sigma-\bar{\Sigma}$, or three mesons of $\pi^+\pi^-\eta$, $K^+K^-\eta$, or $K_S^0K_S^0\eta$ in the FHS using DCPC model. Significant discrepancies in the transverse momentum (p_T) and rapidity (y) distributions among the X(2370) glueball-, tetraquark-, and molecular-state are observed. Thus both of p_T and y distributions could serve as valuable criteria to identify different states of the X(2370).

Internet talk

No

Is this an abstract from experimental collaboration?

No

Name of experiment and experimental site

Is the speaker for that presentation defined?

Yes

Details

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