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## Recent charmonium decay measurements at BESIII

*Wednesday 23 October 2024 15:00 (20 minutes)*

This presentation delves into recent experimental measurements of charmonium decays, encompassing four independent measurements conducted at BESIII. 1) Based on 2.7 billion  $\psi(3686)$  events collected with the BESIII detector at the BEPCII collider, we present the first evidence of  $\chi_{c0} \rightarrow \Lambda \bar{\Lambda} \phi$  decays and the first observation of  $\chi_{c1,2} \rightarrow \Lambda \bar{\Lambda} \phi$  decays, with significances of  $4.5\sigma$ ,  $11.3\sigma$ , and  $13.0\sigma$ , respectively; 2) Using the same data sample, we report the first observation of the decays  $\chi_{c0/1/2} \rightarrow \Lambda \bar{\Lambda} \omega$  with statistical significances of  $11.7\sigma$ ,  $11.2\sigma$ , and  $11.8\sigma$ . The branching fractions of these decays are determined, with no clear intermediate structures observed in the previous and current measurements; 3) The processes  $hc \rightarrow \gamma P(\eta', \eta, \pi^0)$  are studied with a sample of 2.7 billion  $\psi(3686)$  events collected by the BESIII detector at the BEPCII collider. The branching fractions of  $hc \rightarrow \gamma \eta'$  and  $hc \rightarrow \gamma \eta$  are measured, and an upper limit for  $hc \rightarrow \gamma \pi^0$  is set; 4) Utilizing  $9.0 \text{ fb}^{-1}$  of  $e^+e^-$  collision data collected at center-of-mass energies from 4.178 to 4.278 GeV, we conduct the first search for the radiative transition  $\chi_{c1}(3872) \rightarrow \gamma \psi(3823)$ . No obvious signal is observed, and the upper limit at the 90% confidence level is determined.

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