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Recent charmonium decay measurements at BESIII

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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 4.5σ , 11.3σ , and 13.0σ , 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 11.7σ , 11.2σ , and 11.8σ . 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 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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