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Recent Progresses on η_c(1S) Decays at BESIII

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The lowest-mass charmonium ground state, the η_c(1S), serves as a crucial laboratory for testing quantum chromodynamics (QCD) and understanding charmonium decay dynamics. Utilizing its world-leading data samples of J/ψ and ψ(3686) events, the BESIII experiment has recently achieved significant progresses in the study of η_c decays. This presentation will report three key results. First, we will present the first observation of the $_c\to^{00}$ decay, a hadronic decay mode involving a baryon-antibaryon pair. Second, we will report the first model-independent measurement of the absolute branching fraction of the $_c\to$ decay, in which a sample of 0.16 million $_c$ events are tagged via the channel $(3686)\to^0 h_c, h_c\to_c$ to avoid interference effects. Third, we will discuss a high-precision study of the magnetic dipole transition $J/\to_c$, where the $_c$ is reconstructed via its decay to $p\bar{p}$. It has significantly improved our knowledge of this key transition between charmonium S-wave states.

Collaboration

BESIII

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