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Search for invisible decays and J/psi weak decay at BESIII

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BESIII has collected 448 M $\psi(3686)$ events and 10 B J/ψ events. The huge data sample provide an excellent chance to search for new physics. We report the search for the decay $J/\psi \rightarrow \gamma + invisible$, which is predicted by next-to-minimal supersymmetric model. Without significant signal found, we gave about 6 times better upper limits than previous CLEO-c’ s results. We also search for the J/psi rare weak decay to $\bar{D}^0\pi^0, \bar{D}^0\eta, \bar{D}^0\rho^0, D^-\pi^+, D^-\rho^+$ and $D^-e^+\nu_e + c.c.$, and present the most stringent constraints of 10^{-6} at 90\% confidence level. We also report the preliminary result of the first search for the invisible decay of Λ, which is predicted by the mirror matter model and could explain the 4σ discrepancy in neutron lifetime measurement between beam method and bottle method.

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