

High Energy Physics - Experiment

Measurements of $h_c(^1P_1)$ in ψ' Decays

The [BESIII Collaboration](#)*(Submitted on 2 Feb 2010 (v1), last revised 11 Mar 2010 (this version, v2))*

We present measurements of the charmonium state $h_c(^1P_1)$ made with 106M ψ' events collected by BESIII at BEPCII. Clear signals are observed for $\psi' \rightarrow \pi^0 h_c$ with and without the subsequent radiative decay $h_c \rightarrow \gamma \eta_c$. First measurements of the absolute branching ratios $\mathcal{B}(\psi' \rightarrow \pi^0 h_c) = (8.4 \pm 1.3 \pm 1.0) \times 10^{-4}$ and $\mathcal{B}(h_c \rightarrow \gamma \eta_c) = (54.3 \pm 6.7 \pm 5.2)\%$ are presented. A statistics-limited determination of the previously unmeasured h_c width leads to an upper limit $\Gamma(h_c) < 1.44$ MeV (90% confidence). Measurements of $M(h_c) = 3525.40 \pm 0.13 \pm 0.18$ MeV/ c^2 and $\mathcal{B}(\psi' \rightarrow \pi^0 h_c) \times \mathcal{B}(h_c \rightarrow \gamma \eta_c) = (4.58 \pm 0.40 \pm 0.50) \times 10^{-4}$ are consistent with previous results.

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