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Recent results of charmonium transitions at BESIII

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We present the measurements of charmonium P-wave spin-singlet state h_c made with 106M ψ' events collected by BESIII at BEPCII. Clear signals are observed for ψ'->π0 h_c with and without the subsequent radiative decay h_c->γ η_c. First measurements of the absolute branching ratios Br(ψ'->π0 h_c) = (8.4 ± 1.3 ± 1.0)*10-4 and Br(h_c->γ η_c) = (54.3 ± 6.7 ± 5.2)% are also presented. A statistics-limited determination of the previously unmeasured h_c width leads to an upper limit Γ(h_c)<1.44 MeV (90% confidence). Measurements of M(h_c) = 3525.40 ± 0.13 ± 0.18 MeV/c² and the branching ratios are consistent with previous results.*
*Also the observation of two-photon transition of ψ' to J/ψ based on the same data sample is reported. The measurement of the branching fraction is explicitly determined as Br(ψ'->γ γ J/ψ) = (1.02 ± 0.05(stat.) + 0.19 - 0.20(syst.))*10-3 with combination of the studies of two different J/ψ decay channels: J/ψ->e+e- and J/ψ->μ+μ-.

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