



ID de Contribution: 75

Type: Non spécifié

BESIII Experiment

BESIII detector is a large solid-angle magnetic spectrometer at Beijing Electron-Positron Collider (BEPCII) for studies of tau-charm physics. BESIII consists of a small-celled, helium-based main draft chamber (MDC) with 43 layers, an electromagnetic calorimeter (EMC) made of 6240 CsI (Tl) crystals arranged in a cylindrical shape (barrel) plus two endcaps, a Time-Of-Flight system (TOF) for particle identification composed of a barrel part made of two layers with plastic scintillators and two endcaps, a muon chamber system (MUC) made of Resistive Plate Chambers (RPC) arranged in 9 layers in the barrel and 8 layers in the endcaps and a superconducting magnet which provides a magnetic field of 1 Tesla throughout the detector. The average single wire resolution for MDC is 135 μ m, and the momentum resolution for 1 GeV charged particles is 0.5%. For 1.0GeV photons, the energy resolution is 2.5% in the barrel EMC and 5% in the endcaps. The double-layer TOF has a time resolution of 80 ps in the barrel, and 110 ps in the endcaps. BESIII started physics runs in 2009. The detector works properly and stably, and the performance has reached the design requirements. Totally about 100M ψ' and 200M J/ψ events have been accumulated, which are four times of CLEO_C's and three times of BESII's, respectively. Based on 100M ψ' data sample, we observe clear charmonium state h_c in ψ' decay to π^0 and h_c and measure the absolute branching ratios of ψ' decay to π^0 and h_c and h_c decay to γ and η_c for the first time. In the decay of ψ' decay to π^+ , π^- and J/ψ , J/ψ to γ $p\bar{p}$, a strong enhancement at threshold is observed in the $p\bar{p}$ invariant mass spectrum, which confirms BESII observation. We also perform improved measurements to the X_c decays.

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