XVIII International Conference on Hadron Spectroscopy and Structure (HADRON2019)



Contribution ID: 162

Type: Poster

The study of four charged pions production with CMD-3 detector at VEPP-2000 collider

Since 2010 the VEPP-2000 electron-positron collider has been operated at Budker Institute of Nuclear Physics in the center-of-mass (c.m.) energy range from

 $\sqrt{s}=320~{\rm MeV}$ to 2000 MeV. VEPP-2000 has two interaction

regions in which the Cryogenic Magnetic Detector (CMD-3) and the

Spherical Neutral Detector (SND) are installed.

Production of four charged pions in e^+e^- annihilation has been studied

before with good statistics at the CMD-2 and SND detectors as well as using initial-state radiation (ISR) with BaBar

at which a low systematic uncertainty of about 3% was achieved for the $e^+e^- \rightarrow \pi^+\pi^-\pi^+\pi^-$ cross section in the wide c.m. energy range.

In this work the cross section of the process $e^+e^- \rightarrow \pi^+\pi^-\pi^+\pi^-$ has been measured using an integrated luminosity of 168 pb⁻¹ collected with the CMD-3 detector in the c.m. energy range 650-2000 MeV. Also studied

are the internal dynamics of four-pion production. High-precision measurements

of various hadronic cross sections are of great interest in relation with the

problem of the muon anomalous magnetic moment g-2. The $e^+e^- \rightarrow \pi^+\pi^-\pi^+\pi^-$ cross section can be also used to test relations between

 e^+e^- annihilation and τ lepton decays based on conservation of vector current.

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Track Classification: Posters