

Workshop for young scientists with research interests focused on physics at FAIR



Contribution ID: 11

Type: **not specified**

Search for Search for η_{c1} production in $e^+e^- \rightarrow K_s K_{\pi}$

Tuesday, 16 February 2016 10:20 (25 minutes)

Pseudoscalar mesons (P) decaying into lepton-antilepton pairs can provide a signal to physics beyond the Standard Model. Within the Standard Model

$P \rightarrow l^+l^-$ proceeds via a two-photon intermediate state. Therefore it is a fourth order electromagnetic process, and thus suppressed. Determinations of upper limits has previously been performed for π^0 , η and η' decaying to lepton-antilepton pairs. However, until now, no attempt has been made to measure $\eta_{c1} \rightarrow e^+e^-$. The Beijing Electromagnetic Spectrometer III (BESIII) detector at the Beijing Electron-Positron

Collider (BEPC-II) recently performed a beam energy scan resulting in a data set including $\sim 60 \text{ pb}^{-1}$ in the mass region of the η_{c1} . BESIII covers 93% of the 4π solid angle and provides tracking, calorimetry, time of flight information for particle identification,

and muon detection. BEPC-II is a double-ring electron-positron collider optimized for the charmonium region. The data recently collected at BESIII are uniquely suited for studying the $\eta_{c1} \rightarrow e^+e^-$ decay via the reverse process $e^+e^- \rightarrow \eta_{c1}$. It is preferable

to study $e^+e^- \rightarrow \eta_{c1}$ since the signal is expected to be cleaner than in other modes of access, for example $J/\psi \rightarrow \gamma \eta_{c1}$. The statistics of $e^+e^- \rightarrow \eta_{c1}$ is expected to be better in the new data set than in previously available data sets of J/ψ . In this analysis the process $e^+e^- \rightarrow K_s K_{\pi}$ is studied due to the large decay probability of $\eta_{c1} \rightarrow K_s K_{\pi}$. In this talk, the most recent results of this analysis will be presented.

Primary author: PETERSSON, Joachim (Uppsala University(IKP-U))

Presenter: PETERSSON, Joachim (Uppsala University(IKP-U))

Session Classification: Talks