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Studies of Radiative Decays and Search for X(3872) at BABAR

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- A study of radiative Upsilon(2S) and Upsilon(3S) transitions using converted photons We present a study of the radiative transitions from decays of the Upsilon(2S) and Upsilon(3S) resonances using photons that have converted into an e^+e^- pair. This study uses data collected with the BABAR detector operating at the SLAC PEP-II B-factory on the Upsilon(2S) and Upsilon(3S) resonances.
- Search for $f_J(2220)$ Production in Radiative J/ψ Decays We present a search for $f_J(2220)$ production in radiative $J/\psi \rightarrow \gamma f_J(2220)$ decays using 460 fb⁻¹ of data collected with the BaBar detector at the PEP-II storage rings. The $f_J(2220)$ is reconstructed in the decays $f_J(2220) \rightarrow K^+K^-$ and $f_J(2220) \rightarrow K^0_S K^0_{S^*}$. No evidence of this resonance is observed and 90% confidence level upper limits on the $J/\psi \rightarrow \gamma f_J(2220)$, $f_J(2220) \rightarrow K^+K^-$ and $J/\psi \rightarrow \gamma f_J(2220)$, $f_J(2220) \rightarrow K^0_S K^0_{S^*}$ branching fractions are set at the level of 10^{-5} .
- The search for new X(3872) decay modes and for the Z1 and Z2 states in $\chi_{c1} \pi$ We present a search for the X(3872) produced in $B \rightarrow \psi \pi^+ \pi^- K$ and $B \rightarrow \psi \pi^+ \pi^- \pi^0 K$ ($\psi = J/\psi$ or $\psi(2S)$) using 427 fb⁻¹ of BaBar data. We also report on a search for the Z1 and Z2 states in the $\chi_{c1} \pi$ invariant-mass distribution at BaBar. We perform a study of charged and neutral B decays to $\chi_{c1} K \pi$. The aim is to search for the two resonance-like structures, the Z1 and Z2, first observed by the Belle experiment in the $\chi_{c1} \pi^+$ invariant-mass distribution near 4.1 GeV in exclusive $B^0 \rightarrow \chi_{c1} K \pi^+$.

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