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Recent studies of e^+e^- annihilation into hadrons at low energies via ISR at BaBar

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The measurement of exclusive e^+e^- to hadrons processes is a significant part of the physics program of $BABAR$ experiment, aimed to improve the calculation of the hadronic contribution to the muon g–2 and to study the intermediate dynamics of the processes. We present the most recent studies performed on the full data set of about 470 fb^{-1} collected at the PEP-II e^+e^- collider at a center-of-mass energy of about 10.6 GeV. In particular, we report the results on $e^+e^- \to \pi^+\pi^-\pi^0$. From the fit to the measured 3π mass spectrum we determine the products $\Gamma(V \to e^+e^-)$
$calB(V \to 3\pi)$ for the ω and ϕ resonances and for
$calB(\rho \to 3\pi)$. The latter isospin-breaking decay is observed with 6σ significance. The measured $e^+e^- \to \pi^+\pi^-\pi^0$ cross section is used to calculate the leading-order hadronic contribution to the muon magnetic anomaly from this exclusive final state with improved accuracy.
We show also new results on the study of $e^+e^- \to 2K3\pi$ processes, in an energy range from production threshold up to about 4 GeV. For each process, the cross section is measured as a function of the invariant mass of the hadronic final state. The production of several intermediate final states is also measured, allowing for the search for new decay modes of recently discovered resonances.

Collaboration / Activity

BABAR

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