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Recent QCD-related studies with the BaBar detector

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We report some of the most recent results in studying different aspects of QCD with about 500 fb-1 of data collected by the BaBar experiment at the e^+e^- B-factory PEP-II.
Among these, we present a high precision measurement of the mass difference between the $D^*(2010)^+$ and D^+ mesons using the decay chain $D^*(2010)^+ \to D^+\pi^0$, with $D^+ \to K^-\pi^+\pi^+$. This result is then combined with a previous BaBar measurement of $m(D^*(2010)^+) - m(D^0)$ to extract the mass difference between the charged and neutral D mesons. We obtain results that are approximately seven times more precise than the present world averages.
We also report on the first evidence for a B-meson decay to four baryons, $B^0 \to p\bar{p}p\bar{p}$, which can help to shed light on the experimental discrepancy between the inclusive branching fraction of all B meson decay modes with at least a couple of baryons in the final state, measured by ARGUS to be $(6.8 \pm 0.6)\%$, and the sum of exclusive baryonic channels, Finally, we present a measurement of the spectral function for the $\tau^- \to K^- K_S \nu_\tau$ decay, which can be used to determine the hadronic contribution to the muon $g-2$ due to the vacuum polarization,

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