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Hadron spectroscopy and exotics (experiment and theory)
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Experiment: -
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Possible Hints and Search for Glueball Production in Charmless Rare B Decays

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Abstract

Recent data on $B \to p\bar{p}K$, $K^0\pi\pi$ and $KK\bar{K}$ hint at a ~ 2.3 GeV object recoiling against a kaon. This could be the narrow state observed in $J/\psi \to \gamma\xi$. Nonobservation in $p\bar{p}$ annihilation implies $\mathcal{B}(\xi \to p\bar{p}) \sim$ few $\times 10^{-3}$, consistent with η_c and J/ψ decays, but there are actual hints in $p\bar{p} \to \phi\phi$ and $pp \to p\pi^+\pi^-\pi^+\pi^-p$. Simple modeling shows $\mathcal{B}(B \to \xi K)\mathcal{B}(\xi \to p\bar{p}) \sim 1 \times 10^{-6}$, appearing as a spike in the $p\bar{p}$ spectrum, with ~ 30 events per 100 fb^{-1}; modes such as KK_sK_s, $K\phi\phi$, $K4\pi$ ($Kf_2\pi\pi$) etc. should be explored. The underlying dynamics of $g^* \to g\xi$ is analogous to $g^* \to g\eta'$ or gluon fragmentation. Discovery of sizable $B \to \xi K$ could be useful for CP violation studies.

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