THE $f_J(2220)$

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This state has been seen in $J/\psi(1S)$ radiative decay into $K\overline{K}$ (K^+K^- and $K^0_SK^0_S$ modes seen (BALTRUSAITIS 86D, BAI 96B)). An upper limit from DM2 for these modes (AUGUSTIN 88) is at the level at which observation is claimed. There are also indications for further decay modes ($\pi^+\pi^-$ and $\overline{p}p$) in the same production process (BAI 96B), although again at the level at which previous upper limits had been obtained (BALTRUSAITIS 86D); also seen in $\eta\eta$ (ALDE 86B), $K^0_SK^0_S$ (ASTON 88D) and in K^+K^- (ALDE 88F), albeit with very low statistics. Its J^{PC} is determined from the angular distributions of these observations.

It is not seen in Υ radiative decays (BARU 89), B inclusive decays (BEHRENDS 84), nor in $\gamma\gamma$ (GODANG 97). It is also not seen in formation in $\overline{p}p \to K^+K^-$ (BARDIN 87, SCULLI 87), in $\overline{p}p \to K_SK_S$ (BARNES 93, EVANGELISTA 97), nor in $\overline{p}p \to \pi^+\pi^-$ (HASAN 96). The upper limit in $\overline{p}p$ formation can be related to the claimed decay into $\overline{p}p$ to give a lower limit for the process $J/\psi(1S) \to \gamma f_J(2220)$ of $\sim 2.5 \times 10^{-3}$. Such a signal should be visible in the inclusive photon spectrum (BLOOM 82). The limit also leads to the conclusion that two-body final states constitute only a small fraction of all decay modes of the $f_J(2220)$. Observation of further decay modes would be very desirable.