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 $K_S^0K_S^0$ modes seen (BALTRUSAITIS 86D, BAI 96B)). An upper limit from DM2 for these modes (AU-GUSTIN 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), $K_S^0K_S^0$ (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 twobody 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.