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The $K^0_S K^0_S$ Final State in Two-Photon Collisions and Implications for Glueballs

L3 Collaboration

Abstract

The $\mathrm{K^0_S K^0_S}$ final state in two-photon collisions is studied with the L3 detector at LEP. The mass spectrum is dominated by the formation of the $\mathrm{f_2}$:(1525) tensor meson in the helicity-two state with a two-photon width times the branching ratio into $\mathrm{K\bar{K}}$ of $76 \pm 6 \pm 11\,\mathrm{eV}$. A clear signal for the formation of the $\mathrm{f_J}(1710)$ is observed and it is found to be dominated by the spin-two helicity-two state. No resonance is observed in the mass region around 2.2 GeV and an upper limit of 1.4 eV at 95% C.L. is derived for the two-photon width times the branching ratio into $\mathrm{K^0_S K^0_S}$ for the glueball candidate $\xi(2230)$.

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