

Study of resonant-states production in e^+e^- annihilation in the energy region around 2.2 GeV

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Two vector resonances with a mass near 2.2 GeV/ c^2 are presently known: the $\phi(2170)$ observed in several production processes, but seen to decay only to $\phi(2170) \rightarrow \phi(1020)f_0(980)$, and the not well established $\rho(2150)$. Recently the BES-III experiment observed a clear interference pattern in the same energy region in $e^+e^- \rightarrow K^+K^-$, interpreted as a resonance with a mass of 2239 GeV and a width of 0.14 GeV. To shed light on the resonant states in this energy region we measure the reaction $e^+e^- \rightarrow K_S K_L$ with data collected with the *BABAR* detector, and analyse these data in conjunction with published BES-III data on $e^+e^- \rightarrow K^+K^-$ and *BABAR* data on $e^+e^- \rightarrow K^+K^-, \pi^+\pi^-, \pi^+\pi^-\eta, \pi^+\pi^-\omega$. This study supports the existence of an isovector resonance $\rho(2230)$ with mass $M = 2232 \pm 8 \pm 9$ MeV/ c^2 and width $\Gamma = 133 \pm 14 \pm 4$ MeV/ c^2 , consistent with the resonance observed by BES-III.

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