EVIDENCE FOR A 4π DECAY OF AN ISOBAR AT 1300 MeV

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We present evidence for a resonance of mass 1300 MeV that decays sequentially by $X \to A_1 \pi \to \rho\pi\pi \to \pi^+\pi^+\pi^-\pi^-$ in the 6π annihilation channel of $\bar{p}p$ at 3.6 GeV/c. Figure 1 shows the invariant mass distribution of neutral combinations of 4π's. The upper curve shows the invariant distribution of those combinations of 4π's for which a single charged combination has a mass between 1.04 GeV and 1.10 GeV. The lower curve shows a subset of those events for which a neutral subset of the 3π's has a mass between 0.7 GeV and 0.8 GeV. A clear 5σ signal is seen at M = 1300 MeV for the 4π's in the lower curve. Other mass distributions not satisfying these criteria do not show this effect. The resonance is most likely the D(1285) $I^G J^P C = 0^+(1^+)^+$ indicated in the Particle Data Group tables.

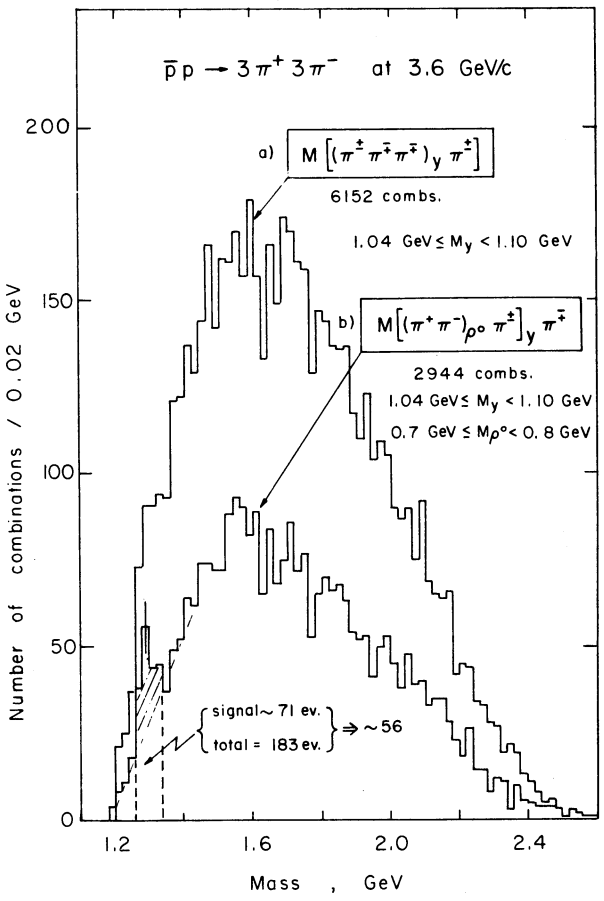

Fig. 1