Study of mesons decaying to $(\omega\pi^{\pm}\pi^{\mp})$ in the reaction $\pi^{-}p \rightarrow \pi^{+}\pi^{+}\pi^{-}\pi^{-}\pi^{0}n$ at 18 GeV/c

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Abstract

This study is based on approximately 2.5 million events of the type $\pi^{+}\pi^{+}\pi^{-}\pi^{-}\gamma\gamma$ obtained from the data collected in the 1995 run of E852 at the MPS facility of BNL. The final data set contains events of the type $\omega\pi^{-}\pi^{+}$. Mesons with exotic quantum numbers have been predicted to decay to this final state. As expected, $b_1(1235)$ and $\rho_3(1690)$ signals are observed in the $\omega\pi^{\mp}$ and the 4π mass spectra respectively. Production of b_1^{-} is enhanced for $b_1^{-}\pi^{+}$ masses near 2 GeV. A spin parity analysis of the $\omega\pi^{-}\pi^{+}$ system including states with exotic quantum numbers is under way.