Study of the $\eta\pi$, $\eta\eta$ and $\eta\eta'$ systems in $\pi^- p$ interactions at 18 GeV/c

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E852 Spokespersons N.M. Cason and S.U.Chung

Submitted by N.M. Cason

Abstract

The reactions $\pi^- p \to p\eta\pi^-$ and $\pi^- p \to n\eta\pi^0$ at 18 GeV/c are studied using a lead glass hodoscope to detect the photons from η and π^0 decay, and using the Brookhaven MultiParticle Spectrometer to measure the charged tracks. Strong enhancements are observed in both reactions in the $a_2(1320)$ mass region where the angular distributions are studied to search for evidence for the production of exotic states. A study of the $\eta\eta$ and $\eta\eta'$ systems in the reactions $\pi^- p \to n\eta\eta$ and $\pi^- p \to n\eta\eta'$ is also described.