Modification of Vector Mesons in Nuclear Matter measured in 12GeV p+A reactions at KEK–PS.

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Abstract

We have measured invariant mass spectra of electron-positoron pair and $K^+ K^-$ pair in 12GeV p+A interaction at KEK Proton-Synchrotron. The aim of the experiment is to detect in-medium modification of the vector meson, which is theoretically predicted as a consequence of partially-restored chiral-symmetry. We have observed clear peaks of $\phi \rightarrow K^+K^-$ with a mass resolution of 2.4 MeV and $\rho, \omega, \phi \rightarrow e^+e^-$ with 9.9 MeV resolution.

Amongst those a signiffiant difference was observed in the mass shapes of $\rho/\omega \rightarrow e^+e^-$ between the p+Cu and p+C data. A possible origine of the mass-shape modification can be the mass shift of the omega meson as suggested by Hatsuda and Lee.

We will report on the results including the mass shape study on $\phi \rightarrow K^+K^-$.