$\phi$ Meson Photoproduction on Nuclear Targets at Jefferson Lab

DENNIS WEYGAND, Jefferson Laboratory — Theoretical calculations predict a shift of vector meson masses within the nuclear medium due to partial restoration of chiral symmetry. Experimental data from KEK on the $\phi$ meson suggests such a shift. Experiment E01-112 at Jefferson Lab produced $\phi$ mesons using a tagged bremsstrahlung photon beam up to 4 GeV incident on a range of nuclear targets. The $\phi$ mesons were observed via the rare leptonic $e^+e^-$ decay, which is devoid of final state interactions, as well as the dominant hadronic mode $K^+K^-$. As the $\phi$ decay is near the $K^+K^-$ production threshold energy, a small change in the meson mass will result in a sharp change in the ratio of the two branching ratios. Preliminary results will be shown.