

Abstract Submitted
for the APR07 Meeting of
The American Physical Society

First measurement of coherent ϕ -meson photoproduction on deuteron TSUTOMU MIBE, Ohio University, HAIYAN GAO, Duke University, KEN HICKS, Ohio University, KEVIN KRAMER, Duke University, STEPAN STEPANYAN, Thomas Jefferson National Accelerator Facility, DAVID TEDESCHI, University of South Carolina, CLAS COLLABORATION — Coherent ϕ -meson photoproduction on deuteron is studied in a high-statistics photo-deuteron experiment at CLAS with a tagged photon beam ($E_\gamma = 0.8 - 3.6$ GeV). The cross section and decay angular distributions have been measured for the first time up to a squared four-momentum transfer $t = (p_\gamma - p_\phi)^2 = -2$ GeV²/c². The cross sections are compared with predictions from a re-scattering model. In the framework of vector meson dominance (VMD), the data are consistent with the total ϕ -N cross section $\sigma_{\phi N}$ at about 10 mb. If vector meson dominance is violated, a larger $\sigma_{\phi N}$ from the A-dependence experiment [1] is possible by introducing a larger t -slope for the $\phi N \rightarrow \phi N$ process than that for the $\gamma N \rightarrow \phi N$ process. The decay angular distributions follow the prediction from helicity conservation. This measurement demonstrates a new approach to the study of the ϕ -N interaction in the energy region where VMD may not be a good approximation.

[1] T. Ishikawa, *et al.* Phys. Lett. **B608**, 215 (2005).

Tsutomu Mibe
Ohio University

Date submitted: 05 Jan 2007

Electronic form version 1.4