

# Beam asymmetry in $\omega$ photoproduction

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## Abstract

In this talk, we shall discuss our preliminary results for the photon beam asymmetry  $\Sigma$  in the  $\vec{\gamma}d \rightarrow \omega p(n)$  channel through the  $\omega \rightarrow \pi^+\pi^-\pi^0$  decay mode. We studied the evolution of  $\Sigma$  as functions of the kinematic variables  $E_\gamma$  and  $\cos\theta_{CM}$ . We identified the final-state particles using the CLAS detector in Hall B of Jefferson Laboratory. Also, we made use of the Hall-B Coherent Bremsstrahlung Facility to provide a high quality beam of linearly polarized photons in the energy range from 1.1 to 2.3 GeV.

We measured the photon beam asymmetry of the photoproduced  $\omega$ s from quasi-free protons in deuterium. Extracting these asymmetries afforded by linearly polarized photons provides information on the underlying mechanisms responsible for  $s$ - and  $t$ -channel processes. Further, since the  $\omega$  meson is an isoscalar ( $I_\omega = 0$ ), photoproduced omegas serve as an ideal isospin filter as only  $N^*$  states may contribute to the production process. This work is funded in part by NSF grant PHY-1307340.