

Photoproduction of the  $\pi^0$  meson was studied using the **CLAS** detector at Thomas Jefferson National Accelerator Facility for incident beam energies from 1.1 GeV to 5.45 GeV. We report the measurement of the  $\pi^0$  differential cross sections  $\frac{d\sigma}{d\Omega}$  and  $\frac{d\sigma}{dt}$ . The angular distributions agree well with the SAID parametrization for incident beam energies below 3 GeV, while for an interpretation of the data within the handbag model is discussed for incident beam energies greater than 3 GeV. The measurement is performed on a liquid hydrogen target in the reaction  $\gamma p \rightarrow p e^+ e^- (\gamma)$  using a tagged photon beam. In the final state of the reaction the Dalitz decay mode and conversion mode are studied, where the final state photon is missing,  $p$ ,  $e^+$  and  $e^-$  are detected. The  $\pi^0$  meson is identified through the missing mass of proton.