η–Photoproduction with SAPHIR and Crystal Barrel at ELSA

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Meson photoproduction beyond single–pion production off the proton is a powerful method to search for the many "missing baryon resonances" predicted by constituent quark models and to clarify the role of other underlying reaction mechanisms. With the charged–particle momentum resolving 4π–detector SAPHIR at the electron stretcher ring ELSA in Bonn the photoproduction of η–mesons off the proton was investigated from threshold up to 2.64 GeV with tagged photons. The main components of the SAPHIR detector are shortly described together with the methods of data analysis. Now the results from the analysis of the rather complete data set will be presented.

In 1999 the former Crystal Barrel detector at LEAR was installed at ELSA. The new "CB-ELSA" arrangement is presented in short. The barrel comprises 1380 CsI–crystals mainly used for measuring energy and angle of photons from neutral meson decays in coincidence with one charged particle. This is detected either by a scintillating fibre dectector surrounding the target or a time-of-flight wall of plastic scintillators covering small forward angles. In many beam–times in 2000 up to April 2001 both the $\eta \to 2\ \gamma$ and the $\eta \to 3\ \pi^0$ decays were detected. First results on η–photoproduction from a run at $E_e = 1.4$ GeV electron energy are shown and compared to the results from SAPHIR and data from literature.