Photoproduction of vector–mesons with the SAPHIR–detector

M. Ostrick[a] for the SAPHIR–Collaboration at ELSA

[a] *Physikalisches Institut, Universiät Bonn*

The excitation spectrum and even basic ground state properties of baryons are still not understood directly in the framework of QCD. Constituent–quark–models are able to reproduce the main features of the baryon mass spectrum at low excitation energies but predict a much richer resonance spectrum at higher energies than has been observed in πN–scattering.
Photoinduced meson–production allows to study properties of individual resonances by choosing selective decay channels, different from πN.
This talk focuses on the photoproduction of ρ–, ω– and Φ–mesons. All tree reactions have been studied at the Electron Stretcher and Accelerator (ELSA) in Bonn/Germany up to center of mass energies of $W = 2.4$ GeV using the SAPHIR–Spectrometer [1].
The experimental setup, data analysis and physical results will be discussed.
Besides the total cross-sections, angular distributions up to $|t| = 2.6$ GeV^2 and decay–angular distributions will be presented. Of particular interest are the results for the ω–production, where strong indications for a hitherto unknown resonance contribution close to threshold exists. For all three reactions significant deviations from the high-energy behavior are observed and will be discussed.

References

[1] W.J.Schwille et al, Nucl. Inst. Meth., **A 344**, 1994, 470