Beitrag ID: **60** Typ: **nicht angegeben**

Study of the eta meson production with polarized proton beam

Mittwoch, 17. September 2014 14:30 (20 Minuten)

The dynamics of η meson production and the interaction of η mesons with nucleons can be studied using the $\vec{p}p \to pp\eta$ reaction via measurements of the analyzing power A_y.
Previous experiments measuring A_y suffer from low statistics~[1,2,3] and large uncertainities, therefore further studies are desirable.
To this end, we have performed a measurement of the $\vec{p}p \to pp\eta$ reaction using the large acceptance and φ symmetric WASA-at-COSY detector, for beam momenta of 2026 MeV/c and 2188 MeV/c.
Protons ejectiles were registered in the forward part of the WASA detector,
while the η meson decay products (e.g. $\eta \to \gamma\gamma$) were detected in the
central Electromagnetic Calorimeter.
The polarization for each beam momentum has been determined using pp elastic scattering.
Furthermore, in order to control systematic effects caused by potential asymmetries in the detector setup, the spin of the proton beam has been flipped for every accelerator cycle.

Systematic studies have been performed calculating the degree of polarization, which is different for spin up and spin down modes. The results of these studies show that the polarization is sensitive to the x- and y-coordinate
of the vertex position~[4,5]. Moreover, it seems now possible to control the polarization
determined from the $\vec{p}p \to pp$ reaction with a systematic error of about 1\%.

In this talk we would like to present preliminary results of determination of the polarization
for the $\vec{p}p \to pp$ reaction, and
the status of the ongoing analysis of the $\vec{p}p \to pp\eta$ reaction.

[1] R. Czyżykiewicz et al. Phys. Rev. Lett.98 (2007) 122003.
[2] F. Balestra et al. Phys. Rev. C 69 (2004) 064003.
[3] P. Winter et al. Eur. Phys. J. A 18 (2003) 355.
[4] M. Hodana, P. Moskal and I. Ozerianska, Acta Phys. Polon. B Suppl. 6 (2013) 1041.
[5] M. Hodana, P. Moskal, I. Ozerianska and M. Zieliński, Acta Phys. Polon. B 45 (2014) 697.

Autor: Dr. ZIELINSKI, Marcin (Jagiellonian University)

Co-Autoren: Frau OZERIANSKA, Iryna (Institute of Physics, Jagiellonian University, Krakow, Poland); Prof. MOSKAL, Pawel (Jagiellonian University)

Vortragende(r): Dr. ZIELINSKI, Marcin (Jagiellonian University)

Sitzung Einordnung: session I