

Recent measurement of tensor analyzing power in deuteron photodisintegration.

D.M. Nikolenko^a, H. Arenhövel^b, L.M. Barkov^a, S.L.Belostotsky^c, V.F.Dmitriev^a, M.V. Dyug^a, R. Gilman^d, A.V.Grigoriev^a, R.J. Holt^e, Isaeva^a, C.W.de Jager^f, E.R. Kinney^g, B.A. Lazarenko^a, A.Yu. Loginov^h, S.I. Mishnev^a, V.V. Nelyubin^c, A.V. Osipov^h, D.H. Potterveld^e, I.A. Rachek^a, R.Sh.Sadykov^a, Yu.V. Shestakov^a, V.V. Vikhrov^c, A.A. Sidorov^h, V.N. Stibunov^h, D.K. Toporkov^a, H.de Vriesⁱ, and S.A. Zevakov^a.

^a BINP, 630090 Novosibirsk, Russia

^b IKP, JGU, D-55099 Mainz, Germany

^c PINP, Gatchina 188350 St.Petersburg, Russia

^d RU, Piscataway, NJ 08855, USA

^e ANL, Argonne, IL 60439-4843, USA

^f TJNAF, Newport News, Virginia 23606, USA

^g CU, Boulder, CO 80309, USA

^h INP TPU, 634050 Tomsk, Russia

ⁱ NIKHEF, P.O. Box41882, 1009 DB Amsterdam, The Netherlands

The deuteron two-body photodisintegration was a subject of intensive experimental and theoretical research for a long time. However a tensor analyzing power was measured only in two experiments at VEPP-2 and VEPP-3 storage rings in Novosibirsk [1]. Here we report the experiment performed at the 2 GeV electron storage ring VEPP-3, where new polarized deuterium gas target [2] was used. Measurements of target asymmetry were performed with three directions of the deuteron polarization axis, that provides a possibility to calculate all three tensor analyzing power components (T_{20} , T_{21} and T_{22}).

During deuteron disintegration the electrons scattered forward, i.e. at an angle $\vartheta_e \approx 0^\circ$, they were not detected. Large-acceptance non-magnetic particle detector registered protons and neutrons in coincidence. The proton arm accepted the angular range $\theta_p \approx 15^\circ - 100^\circ$ and $\Delta\phi_p \approx 40^\circ$. The positions of the neutron arm were conjugate to the proton one. The energy range was $E_\gamma = 40 - 500$ MeV.

Preliminary analysis shows that new data should provide much higher statistical accuracy and smaller systematic uncertainties for tensor analyzing power than in previous experiments.

Preliminary results will be presented.

References

- [1] M.V.Mostovoy *et al.*, Phys. Lett. **B189** (1987) 181; S.I.Mishnev *et al.*, Phys. Lett. **B302** (1993) 23.
- [2] M.V.Dyug *et al.*, Nucl. Instrum. Methods A **495** (2002) 8.