Measurement of Tensor Analyzing Powers in Elastic Electron-Deuteron Scattering at Momentum Transfer Range $2.8 - 4.6 fm^{-1}$.

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The polarization observables of elastic electron-deuteron scattering provide an important information for the investigation of the nucleon-nucleon interaction as well as for the study of non-nucleon degrees of freedom. We report the results of a new phase of the internal target experiment at the 2 GeV electron storage ring VEPP-3, Novosibirsk, where substantial increase of the experiment figure of merit has been achieved. New polarized internal gas target with intense cryogenic atomic beam source was used. The record flux from the source ($\sim 8 \times 10^{16}$ of polarized deuterium atoms/sec) was obtained due to the usage of the strong superconductive sextupole magnets.

The electron beam optics in the experimental section of VEPP-3 ring was modified to get a possibility to employ a small-aperture target storage cell.

Large acceptance nonmagnetic particle detector registered scattered electron and recoil deuteron in coincidence in a wide momentum transfer (Q) range.

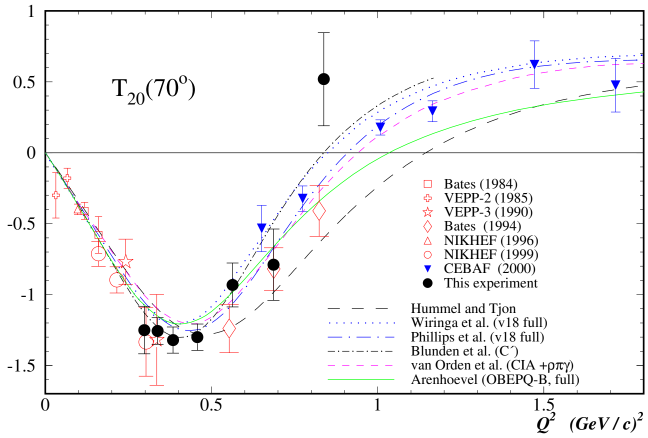

Figure 1: Data and theories for T_{20}.

Our measurements of tensor analyzing power components T_{20} (solid circles on Fig.1) and T_{21} don't contradict the previous measurements. In the region $Q^2 = 0.3 - 0.6 (GeV/c)^2$ new results significantly improve the accuracy of T_{20} and T_{21} and give a possibility to determine the deuteron form factors G_C and G_Q in the important range of Q, where the first node of the deuteron monopole charge form factor is located.