To summarize, the precise determination of the neutron beam polarization is carried out in this work using two setups with different curvature signes of the supermirrors. The values of the polarization obtained for both device geometries are equal with an accuracy of 10^{-3}. This fact confirms formally the reliability of the result.

Another criterion is the coincidence of the polarization values P_1, P_1', P_2 and P_3 within the errors under the condition that parameter "b" is small.

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MEASUREMENT OF POLARIZATION OBSERVABLES IN $\vec{d}+p \to \vec{p}+p+n$ REACTIONS AT $T_d = 2.0$ GeV

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We have studied the deuteron breakup in the $p(d,2p)n$ reaction at T_d=2.0 GeV. In this experiment, the vector analyzing power A_y, the tensor analysing power A_{yy}, and the polarization of the forward scattered proton are measured in a kinematical domain close to the *pp* quasifree scattering. These observables are presented as a function of the neutron momentum ranging from 0.04 to 0.45 GeV/c in the rest frame of the deuteron. Marked deviations from the first order Impulse Approximation using conventional deuteron wave functions are observed. Corrections due to the multiple scattering, the final state interaction and the Δ excitation are computed. With them, a reasonable agreement with the data is obtained.

The polarized deuteron beam of the accelerator SATURNE was incident on a 4 cm thick liquid hydrogen target. Fast protons from the reaction (p_1) were selected at the scattering angle $\Theta_1 = 18° \pm 0.5°$ by the magnetic spectrometer SPES-4 in coincidence with the recoil protons (p_2) detected at the angle $\Theta_2 = 57°$($\pm 4.25°$ in the scattering plane and $\pm 8°$ in the vertical plane) with a mosaic of E and ΔE scintillation counters. Two multiwire proportional chambers at 1.5 and 3 m from the target provided determining the recoil track position. Six central momentum settings for the proton detected in SPES-4 (p_{10} = 1.6, 1.7, 1.8, 1.9, 2.0, 2.05 GeV/c) were used. The polarimeter POMME located behind the final focal plane of SPES-4 was used to measure the polarization of the fast protons. At the chosen Θ_1 and

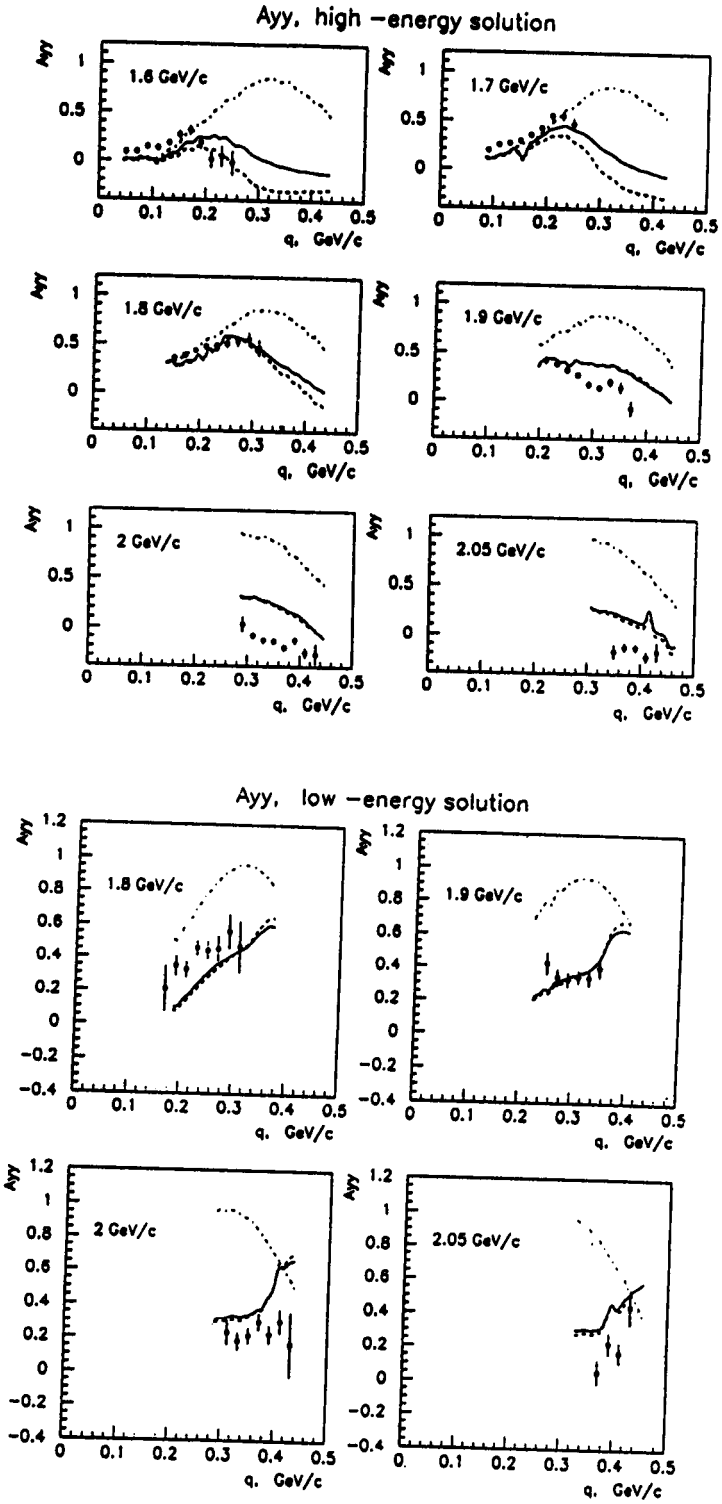

Fig.1. Tensor analyzing power A_{yy}. High and low energy solutions

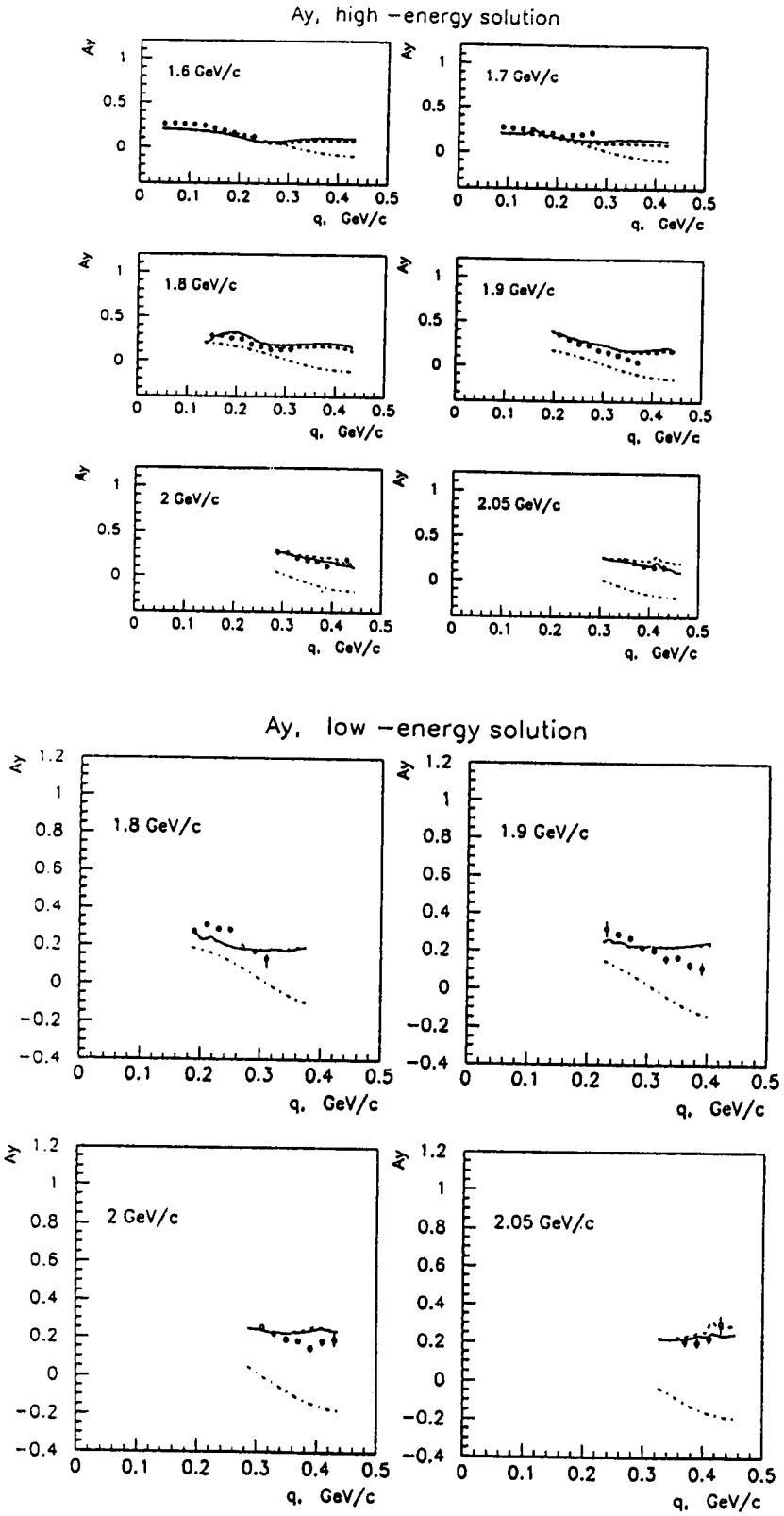

Fig.2. Vector analyzing power A_y. High and low energy solutions

for the momentum p_1 of the fast proton two kinematical solutions are possible for the recoil proton energy T_2, we define them as "high energy" (HES) and "low energy" (LES) solutions. The neutron spectator momenta, denoted as q in the deuteron rest frame, range from 30 to 440 MeV/c.

The measured tensor analysing powers A_{yy} and the calculation results with the Bonn deuteron wave function are shown in Figs.1. The main feature of the experimental data is the strong deviation from simple IA (dash–dotted line) for $q \geq 0.2$ GeV/c. The full theory including the delta exitation graphs (full line) gives the satisfactory explanation of this deviation, the multiple scattering graphs (dashed line) playing the decisive role.

The vector analysing power results A_y shown in Fig.2 exhibit a similar tendency: significative correction to the IA above 0.25 GeV/c arising from the above mentioned mechanisms. The good coincidence of the full calculations with the experimental points is achieved at all SPES-4 settings for both high and low energy solutions.

PARITY NONCONSERVING NEUTRON SPIN ROTATION IN THE VICINITY OF ^{139}La P–WAVE RESONANCE

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It is well known that weak interaction in nuclei results in arising neutron optical phenomena in the passage through a nuclear target. These PNC–effects are as follows:

$$\Delta\sigma_{PNC} = \frac{4\pi}{k} \cdot \mathrm{Im}(f(0)^+ - f(0)^-) \quad - \quad \text{neutron optical dichroism}$$

and

$$\Phi_{PNC} = \frac{4\pi}{k} \cdot n \cdot L \cdot \mathrm{Re}(f(0)^+ - f(0)^-) \quad - \quad \text{neutron spin rotation,}$$

where:
$f(0)^{\pm}$ – the forward scattering amplitudes,
$\Delta\sigma_{PNC}$ – cross section difference for the opposite neutron helicities,
Φ_{PNC} – spin rotation angle,
n – atomic number density,
L – nuclear target thickness.

Effect of neutron optical dichroism had been observed and investigated both in the thermal neutron energy region and in the resonance one [1,2]. In the vicinity of p-wave resonance the effect was observed to be enhanced, in particular, for 0.734 eV resonance of ^{139}La up to the value about 10% [2]. Unlike PNC–dichroism, the effect of neutron spin rotation around neutron linear momentum was studied in this nucleus with the cold polarized neutrons only. Investigations of this effect with resonance energy neutrons present a considerable challenges such as low polarized neutron beam intensity and necessity of the precise neutron polarization control. That is why only one attempt to observe this effect in the vicinity of 0.734 eV resonance in ^{139}La is known till now [3], however results were obtained with a very poor statistical accuracy.