

MEASUREMENT OF THE SPIN-CORRELATION COEFFICIENTS C_{nn} AND C_{kp} IN ELASTIC pp -SCATTERING AT AN ENERGY OF 315 MeV

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In this experiment the components C_{nn} and C_{kp} of the spin-correlation tensor in elastic pp -scattering at an energy of 315 MeV and an angle 45° CM were measured.

The measurement was performed with a beam of polarized protons. 660-MeV protons were slowed down in a polyethylene block to 315 MeV and were scattered by a hydrogen-containing target (CH_2). The second scattering of the protons took place on analyzing targets placed inside spark chambers.

Protons scattered at an angle of 21° LAB had an energy of 269 MeV and were analyzed on an aluminum target. Recoil protons (at an angle of 68°) possessed an energy of about 29 MeV and were scattered the second time on targets of scintillating CH-plastic. 1663 cases of correlated scattering of protons were recorded. The angular dependence of proton polarization on Al- and C- targets was determined experimentally. Analysis by the

maximum likelihood method [1-3] and allowance for all corrections yielded: $C_{nn} = 0.90 \pm 0.51$; $C_{kp} = 0.74 \pm 0.51$.

These coefficients were used in the phase analysis of pp -scattering at 310 MeV. From the phase analysis data [4, 5] it follows that the existence of the first set of phase shifts is about three – four times as probable as that of the second set.

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