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Measurement of the Spin Correlation Parameter A_{oonn} for p-p Elastic 3.11 Scattering in the Energy Range from 0.83 to 1.1 GeV

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The present results are a part of a complete set of experiments to determine the pp scattering amplitudes in the energy range of SATURNE II.

The accelerated polarized beam was extracted and scattered on the Saclay frozen spin target [1]. The orientations of the beam and target polarizations were vertical, the beam polarization was flipped every burst, target polarization was reversed about every three hours.



Fig. 1 - Experimental set-up

The experimental set-up is shown in Fig. 1. The forward arm detecting the scattered particle ($\theta_{CM} \leq 90^{\circ}$) comprises a bending magnet. Both the forward and the recoil arms are equipped with scintillation counters (TD and TG), scintillation hodoscopes (H3 and H12) and proportional wire chambers (C1, C2, C3, C11, C12). The four-fold coincidence TD. EH3.TG. EH12 triggers the data acquisition of the MWPC's.

About 3.10⁵ events were registered at each of the five energies. The parameter $A_{\rm conn}$ (together with $A_{\rm cono})$ was calculated from the normalized numbers of selected events for opposite signs of P_{B} and P_{T} .

The results are shown in Figs 2a-e. The quoted errors comprise the statistics and the errors on the beam polarization PB . The uncertainty on the target polarization results in additional systematic error representing about ± 2% . The Figs 2a-e also shown the previously published results in the same energy regions [2-4], as well as the predictions of the phase shift analysis by Arndt et al. [5].

The main new features of our results are the angular distributions of A_{oonn} at large angles. The order of magnitude is as predicted by the PSA [5] but not the angular distribution in general, except for the minimum at about 75° CM, which seems to develop with increasing energy. The values of A_{conn} at θ_{CM} = 90° are slightly decreasing with increasing energy as it was expected from the compilation of the data [6] in a wider energy range.



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