

Drift chamber calibration and particle identification in the P-349 experiment

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Collaboration

Abstract content

The goal of the P-349 experiment is to determine polarization of antiprotons produced in pA collisions [1]. Experimentally this is done by the measurement of the left-right asymmetry of elastic antiproton scattering on a liquid hydrogen target in the Coulomb-nuclear interference region.

According to preliminary calculations, the maximum of the analyzing power A_y equal to about -4.5% is reached for a four-momentum transfer $|t| = 0.003 \text{ GeV}/c$ [2] which corresponds to a scattering angle in the laboratory frame in the range of 10 - 20 mrad. Therefore, the required track reconstruction precision expected to be sufficient for the asymmetry determination is equal to about 1 mrad.

The experiment was performed in the PS test beam East Area, CERN in 2014 and 2015 and the data analysis is ongoing [3]. Currently, the main goals are reaching the desired track reconstruction precision and elimination of the dominant pionic background.

In this contribution the current status of the analysis will be presented with a focus on the drift chambers calibration, track identification and reconstruction and particle identification with DIRC.

1. D. Grzonka et al., Acta Phys. Pol. B 46, 191 (2015).
2. J. Haidenbauer, private communication.
3. D. Alfs et al., Acta Phys. Pol. B 48, 1938 (2017).

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