

Absolute polarization measurement of the 200 MeV proton beam at Linac.

Monday, 29 June 2020 10:30 (30 minutes)

The 200 MeV polarimeter at Linac is based on the elastic proton-carbon scattering at 16.2° angle, where the analyzing power reaches almost absolute maximum which was experimentally established with high accuracy of $99.35 \pm 0.15\%$. The elastically and inelastically scattered protons are clearly separated by the difference in the propagation through adjustable thickness copper absorber and energy deposition of the stopped protons in the detectors. The elastic scattering polarimeter used for calibration of a high rate inclusive 12° polarimeter for the on-line polarization tuning and monitoring. In Run 2017 a new WFD based DAQ was developed for better elastic scattering isolation. Preliminary results showed, that experimental uncertainties in the absolute polarization measurements are expected to be $P^{\text{syst}} < 0.6\%$ and $P^{\text{stat}} \sim 0.4\%/\text{hour}$. We plan further DAQ and detectors improvements in the next polarized proton Run.

Primary author: POBLAGUEV, Andrei (BNL)

Co-authors: ZELENSKI, Anatoli (BNL); ATOIAN, Grigor (BNL)

Presenter: POBLAGUEV, Andrei (BNL)