

COMPASS Polarized Target For Drell–Yan

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July 1, 2016

Abstract

In the polarized Drell–Yan experiment at the COMPASS facility in CERN a pion beam with momentum of $190 \text{ GeV}/c$ and intensity about 10^8 pions/s interacted with transversely polarized proton target. The muon pair produced in Drell–Yan process was detected. The measurement was done in 2015 as the 1st ever polarized Drell–Yan experiment.

The solid-state NH_3 as polarized proton target was polarized by dynamic nuclear polarization in 2.5 T field of a large-acceptance superconducting magnet. A large helium-3/4 dilution cryostat was used to cool the target down below 100 mK. Polarization reached during the data taking was about 80%. Two target cells, each 55 cm long and 4 cm in diameter were used. In total the target material volume was about 690 cm^3 . The upgrade of the target system, initial commissioning and operation will be presented.