



Contribution ID: 49

Type: not specified

Thermal Analysis and Simulation of the Superconducting Magnet in the SpinQuest Experiment at Fermilab

Tuesday, 24 September 2019 14:40 (20 minutes)

The SpinQuest experiment at Fermilab aims to measure the Sivers asymmetry for the \bar{u} and \bar{d} sea quarks in the nucleon using the Drell-Yan process. The experiment will use a 5 T magnet, a ^4He evaporation fridge with a large pumping system and 140 GHz microwaves to produce transversely polarized NH_3 and ND_3 targets. The proposed beam intensity is 1.5×10^{12} of 120 GeV proton/sec. A quench simulation in the superconducting magnet is performed to determine the maximum intensity of the proton beam before the magnet transition to the resistive state. In this presentation a GEANT based simulation used to calculate the heat deposited in the magnet is discussed and the subsequent cooling processes which are modeled using the COMSOL Multiphysics are presented.

Summary

Primary author: AKBAR, Zulkaida (University of Virginia)

Presenter: AKBAR, Zulkaida (University of Virginia)

Session Classification: Solid Polarized Targets

Track Classification: Solid Polarized Targets