

# SpinQuest Polarized Target

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## Overview

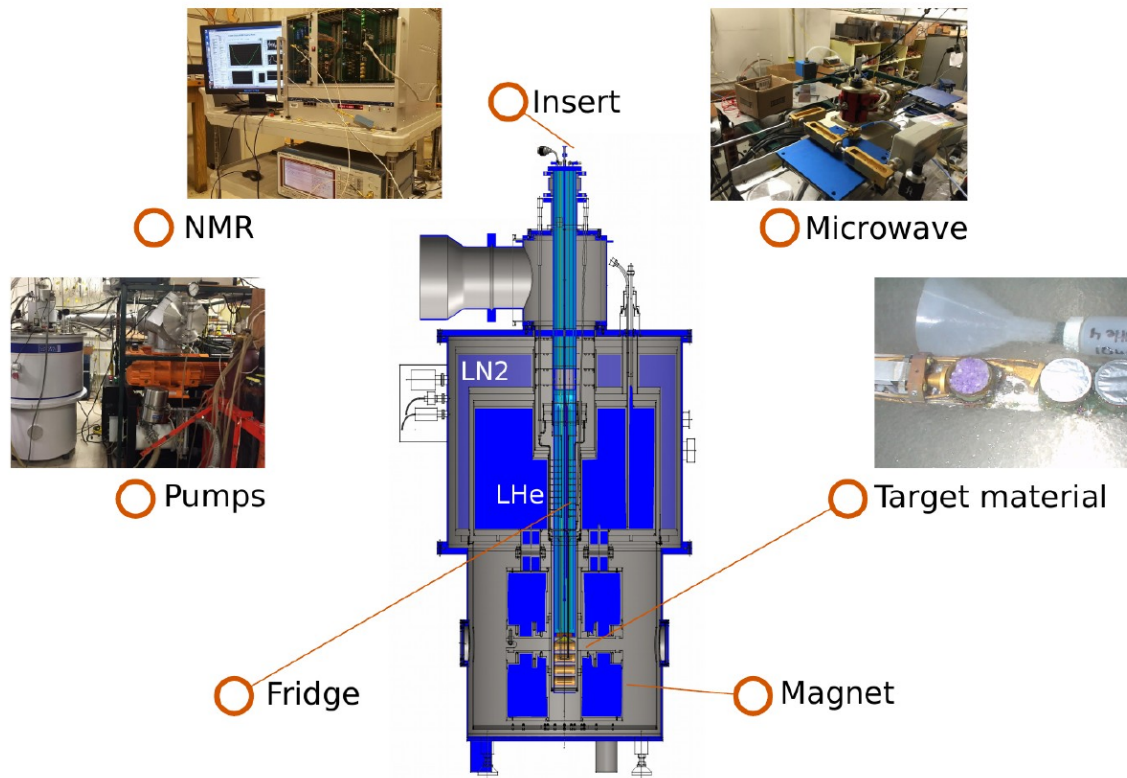
### What do you need to know about the polarized target system?

The polarized target system consists of 6 major subsystems:

1. The cryogenic [Evaporation Fridge](#) is designed to provide high cooling power (1 W) at 1 K.
2. The [Pump Stack](#) is two 7000 m<sup>3</sup>/hour in parallel backed by a 7000 m<sup>3</sup>/hour backed by a 755 m<sup>3</sup>/hour rotary vane.
3. The [NMR \(Nuclear Magnetic Resonance\)](#) system is needed to measure the polarization of the sample.
4. The [CPI EIO \(Extended Interaction Oscillator\)](#) is a microwave generator used in DNP.
5. The [Target Material](#) is a frozen solid material with the necessary characteristics for nucleon polarization.
6. The [Oxford Superconducting Magnet](#) is vertically pointing split pair magnet needed for DNP.

Ready to go

What did you change? Notify watchers



### What is special about the Drell-Yan Target

This system has the longest (along the beam-line) target cell to date for an evaporation fridge, this requires a unique microwave distributing horn and three [NMR](#) coils per target cell to further reduce systematics in the polarization measurement. This system was configured with the intention of having the greatest instantaneous luminosity of any previous evaporation system by having a beam intensity of  $3 \times 10^{12}$  protons/sec for 5 seconds while using a large pump system 17,000 m<sup>3</sup>/hour (16,800 m<sup>3</sup>/hour at 60Hz). We are also running an experiment with both polarized protons and neutrons which share different sensitivity to the overall figure of merit of the Drell-Yan asymmetry.

## Target Details

[Introduction to the Drell-Yan PT](#)

[System Photos](#)

[Target Logbook](#)

## Polarized Target Training

[Polarized Target Summary](#)

[Anneal Summary](#)

[Target Operators](#)

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## Target Operation Procedure

[PDP Restart Procedure](#)  
[Cryo Screen Restart Procedure](#)  
[Target Movement Procedure](#)  
[New Baseline Procedure](#)  
[Thermal Equilibrium Measurement Procedure](#)  
[\[Prepare Fridge for Polarization\]](#)  
[Anneal Procedure](#)  
[\[Target Replacement Procedure\]](#)  
[Magnet Energization Procedure](#)  
[NMR Setup Instructions](#)

## Target Documentation

[Target Device List](#)   
[LabVIEW Virtual Instrument \(VI\) Manual](#)   
[Microwave Generator Manual](#)  
[Magnet Power Supply Operation](#)  
[Piping and Instrumentation Diagram](#)  
[Hardware Manuals](#)   
[Cernox Target Insert Sensors](#)  
[Target To Do List Before Fermilab](#)  
[Target To Do List At Fermilab](#)  
[Target To Do List for Anchit](#)  
[Target To Get List \(still needed equipment\)](#)  
[Request Service from Fermilab](#)  
[Full Equipment List to be sent Fermilab](#)  
[Parts List By Subsystem](#)  
[Target Mechanics](#)  
[Simulations](#)  
[Experiment Schedule](#)  
[Penetration in Cave](#)