

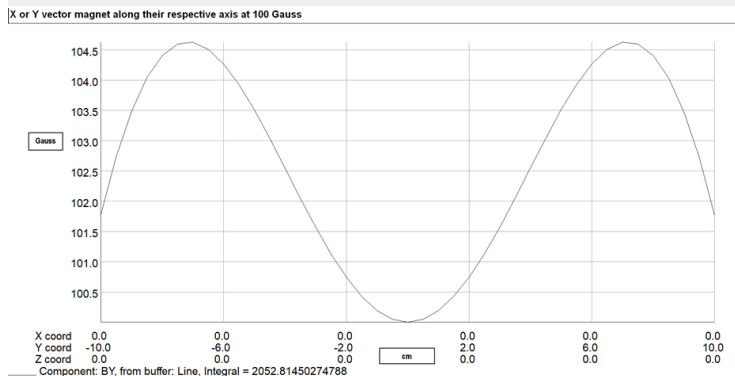
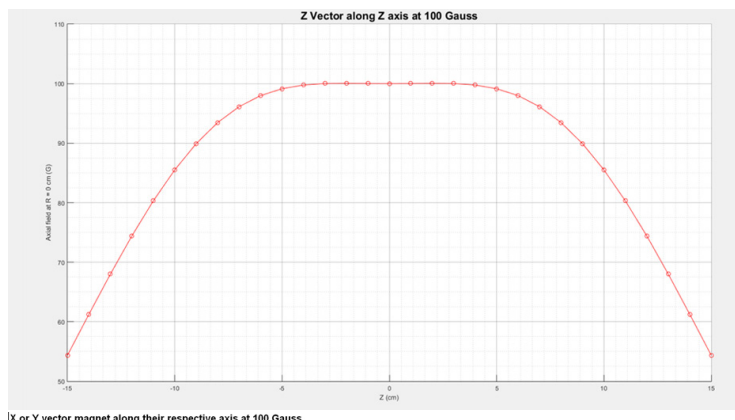
Overview of Cryogenic 3.5 T high homogeneity and high persistence cryogen free magnet system for muon spin spectroscopy experiments

The magnet produces a homogeneous central field of 3.5T within a 6-way room temperature access cruciform. The cruciform has main horizontal access of 213mm (Z), a vertical 104mm access (X) and a 104mm horizontal Y access.

In addition to the main 3.5T windings the cryostat houses three orthogonal vector magnets which can generate small offset fields along the X, Y, Z axes and three shim windings aligned along the X, Y, Z axes to allow for trimming of the field at the centre of the 3.5T magnet.

The cryostat is cylindrical, with a horizontal central axis and overall nominal dimensions of 1.1m in diameter by approximately 0.82m in length. All the magnet windings are manufactured using a niobium-titanium superconductor and provide a homogeneous field profile central to the cruciform access.

The magnet windings operate at nominally 4K and are cooled by two pulse tube two-stage cryocoolers, each delivering 1.5W cooling power at their second stage. The first stage of each cryocooler is linked to a thermal radiation shield surrounding the magnet structure. In addition, the first stage of each cryocooler provides thermal grounding for any services which terminate at the second stage. No liquid cryogenes are used for the normal operation of the system.



Specification

- » Cryogen free split pair magnet system with horizontally oriented magnetic field axis
- » Ambient temperature bore along the main field axis of diameter Ø213 mm
- » Ambient temperature bore along the vertical axis with a diameter of Ø104 mm
- » Integrated vector magnet/field cancellation coils for central field region
- » Including x, y, z shim coils
- » Corresponding control software and control unit.