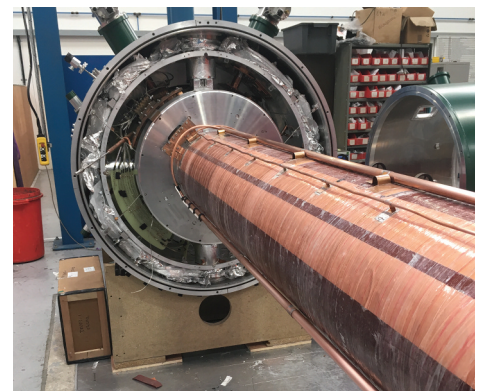


CRYOGENIC

ACTIVELY SHIELDED NAB SPECTROMETER THE LARGEST CRYOGEN-FREE SYSTEM IN THE WORLD

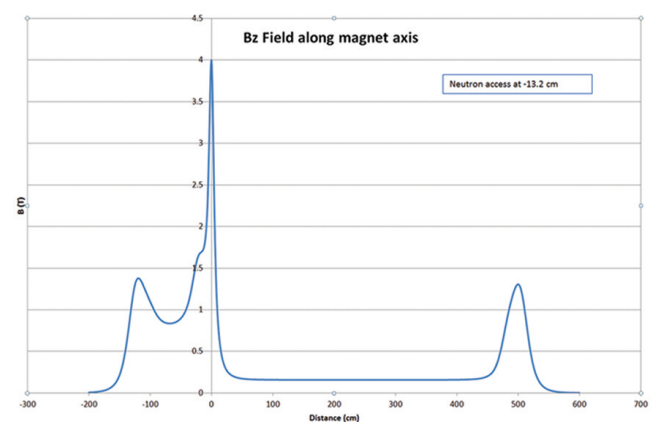


- Used to make precision neutron decay measurements and test the weak interaction in the Standard Model of particle physics.
- The results will provide important inputs for astrophysical processes.
- Key measurements will be of the electron-neutrino correlation parameter, and the Fierz interference term in neutron beta decay.



Key Features:

- Detector is housed in a cryogen-free magnet system 7.5 m long and \varnothing 1.4 m.
- Magnet cold mass > 1 tonne, cooled by four Gifford McMahon cryocoolers.



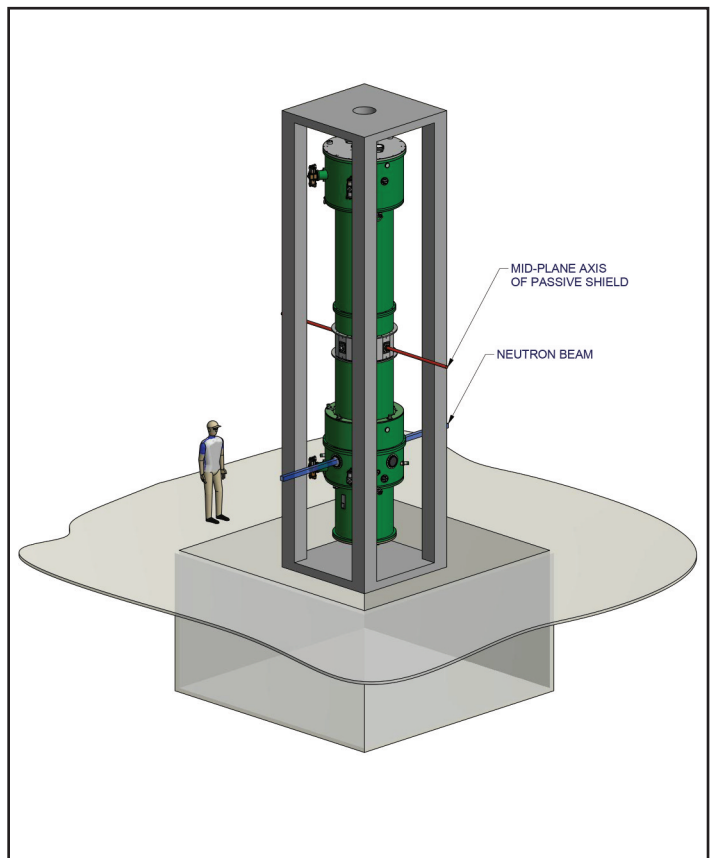
Bz, Field along magnet axis

CRYOGENIC

ACTIVELY SHIELDED NAB SPECTROMETER

Key Features:

- Operates both horizontally and vertically. Vertical when positioned on the neutron beam.
- Cryostat houses eleven separate superconducting cryogen-free magnets producing a complex field profile along a central gold-plated UHV cold bore tube.
- Magnetic field directs protons and electrons along the bore tube to silicon detectors at either end.
- All core magnets are actively shielded to limit external stray fields.
- Bore tube is $\varnothing 320$ mm with a 70 mm restriction above the neutron beam.
- Evacuated to 10^{-11} mbar when cold.
- Total mass over 3 tonnes.



Item Description

- 1 Axial tie rod fixing
- 2 16.5 inch US CF flange
- 3 Axial tie rod fixing
- 4 Sumitomo SRDK -415D 1.5 W cryocooler
- 5 Radial tie rod fixing
- 6 Instrumentation flange
- 7 CF 160 flange
- 8 Magnet terminals
- 9 NW50KF evacuation valves
- 10 Rotation plate
- 11 Lifting eye

