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# Polarized Neutron Scattering Magnet

This split pair HTS magnet provides a maximum magnetic field of more than 3 tesla with vertical sample access and horizontal optical access. The magnet also offers a vertical room temperature bore of 81 mm in diameter to allow access to the users' dilution refrigerator inserts. Meanwhile, four horizontal bores with an opening angle of greater than 30° provide neutron access to samples up to 20 mm in diameter.

The magnet will be used in combination with a  $^3\text{He}$  spin analyser, operation of which requires a low and very homogeneous magnetic field ( $< 10^{-4} \text{ cm}^{-1}$ ) around the spin filter cell. Through the use of specially designed iron magnetic shielding on the magnet, the fringe field is reduced to less than 1 mT at 0.5 m from the magnetic centre. This unique solution also provides zero-field nodes located outside the magnet cryostat, easing the control of neutron polarization through the magnet, an important factor in the use of spin-polarised neutrons.

This magnet demonstrates again the leadership of HTS-110 in meeting combined requirements of magnetic field, sample access, optical access and neutron depolarization with passively shielded, symmetric split-pair HTS magnets for polarized neutron experiments.

