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A wide aperture high field asymmetric magnet for diffraction at ESS

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We present a new cryomagnet development for ESS, principally for use on the MAGiC instrument, but also suitable for other diffraction instruments in the ESS suite. In order to take advantage of the large detector area and polarised beam, a very large, asymmetric, aperture has been prioritised, with a maximum field of 8 T. The bore size is 50 mm, to allow for ULT inserts and bulky samples such as pressure cells or low temperature rotation stages.

Since all ESS instruments have the detectors on the left, the coils can be supported in bulk on the opposite side. The system will include motion stages for z- and omega axes.

To help with rapid alignment on the instruments the magnet will be adapted to the ESS kinematic mounting system. The mounting will allow for in-situ magnetic force measurement at the exactly intended position before being put into regular service.

As ESS will have a site-wide helium recovery network a wet system has been chosen.

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