



Contribution ID: 261 Contribution code: TUP68

Type: **Poster Presentation**

The High Magnetic Field beamline at CHES: endstation challenges, solutions and implementation

Tuesday 16 September 2025 17:15 (1 hour)

The High Magnetic Field (ID5A) beamline currently under construction at CHES will enable the study of samples with hard X-rays under an extreme DC magnetic field up to 20T. The sample is inserted into an XYZ stage embedded at the center of a superconducting magnet, which can rotate around the vertical axis. Magnet rotation is achieved from the air side through a vacuum-tight 1.1 m diameter rotary seal. X-rays downstream from the sample are collected by an in-vacuum area detector mounted on a θ RZ stage, which allows synchronized coaxial motion with the magnet within a very tight cylinder of confusion (20 μ m radius). A large, curved gate valve separates the large vacuum vessel into two independent chambers, allowing maintenance operations in the detector space while keeping the magnet under cryogenic conditions. Furthermore, the whole endstation (around 24 mt weight) can be moved by \pm 25 mm in the vertical plane perpendicular to the beam, in order to adjust for changes in the beam position. Due to the high field, magnetic permeability must be as low as possible everywhere, ruling out the use of carbon steel anywhere in any significant amount e.g. for rails.

Footnotes

Funding Agency

Author: Dr CACHO-NERIN, Fernando

Co-authors: PAULING, Alan (Cornell University); IGLESIAS ARISTIMUNO, Asier (ALBA Synchrotron (Spain)); BURKE, David (Cornell University); VAN EVERY, Eric; MCELWEE, Gregg (Cornell University); I OCONNELL, Timothy

Presenter: Dr CACHO-NERIN, Fernando

Session Classification: Poster Session 1

Track Classification: BEAMLINES: Beamlines and Instruments