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NMX Macromolecular Diffractometer at the European Spallation Source

Monday, 20 March 2023 16:00 (2 hours)

The NMX Macromolecular Diffractometer is optimised for small samples and large unit cells dedicated to the structure determination of biological macromolecules by crystallography. Neutron macromolecular crystallography is mainly driven by its ability to locate hydrogen atoms in biological macromolecules. NMX is a macromolecular diffractometer that uses the time-of-flight (TOF) quasi-Laue technique. The typical wavelength band is 1.8-3.55 Å, but wavelengths up to 10 Å are available. The collimation system tailors the beam size and divergence to the needs of the experiment. The sample is mounted on a six-axis robotic arm that allows the orientation to be optimised. The detectors are also mounted on robotic arms, which allows their positions to be optimised for the experiment. This allows data collection from crystals with unit cells up to 300 Å or more.

The detector technology is based on gas-electron multipliers (GEMs) with Gd as a neutron converter. This combines large detector area with high spatial resolution and time-of-flight capability.

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