B18 Core XAS beamline [1] is a bending-based instrument optimized to perform X-ray absorption spectroscopy operating over a large energy range, from 2 keV to 35 keV. It serves a broad user community, performing experiments in a wide area of disciplines, from chemistry and catalysis to energy materials, hard condensed matter, biology and cultural heritage. As part of the Diamond-II upgrade programme, a new low emittance machine based on a double bend acrobat lattice will be adopted. In this new lattice, the current bending magnet sources will be replaced by insertion devices placed in the newly created straight sections.

The source for B18 beamline after Diamond-II upgrade will be a 3-pole wiggler (3PW) that has been optimised to maintain a large beam, a smooth flux over the whole energy range and avoid interference between the radiation generated by the 3 poles (Fig 1). Major upgrades have been planned to install new optics and cooling systems suitable for the new source, together with new high performance detectors staying on top of the current developments in the area.

To fully exploit the higher flux of the new source, that could be converted in high throughput or faster in-situ experiments, upgrades are planned also to the beamline software to improve automation in data acquisition and real time data analysis for data-driven experiment decisions.

The aim is to maintain the flexibility, ease of operation, reliability and stability of B18 and deliver a competitive beamline as a suitable tool for X-ray absorption spectroscopy investigations of new exciting scientific challenges.

![Figure 1](image)

**Figure 1.** Simulated flux density at 2keV with contributions from nearest dipoles (DQ), H-steerers magnets of 3PW and radiator central pole of 3PW. Schematic representation of the fraction of flux accepted by K18 Front End aperture and optics branches.