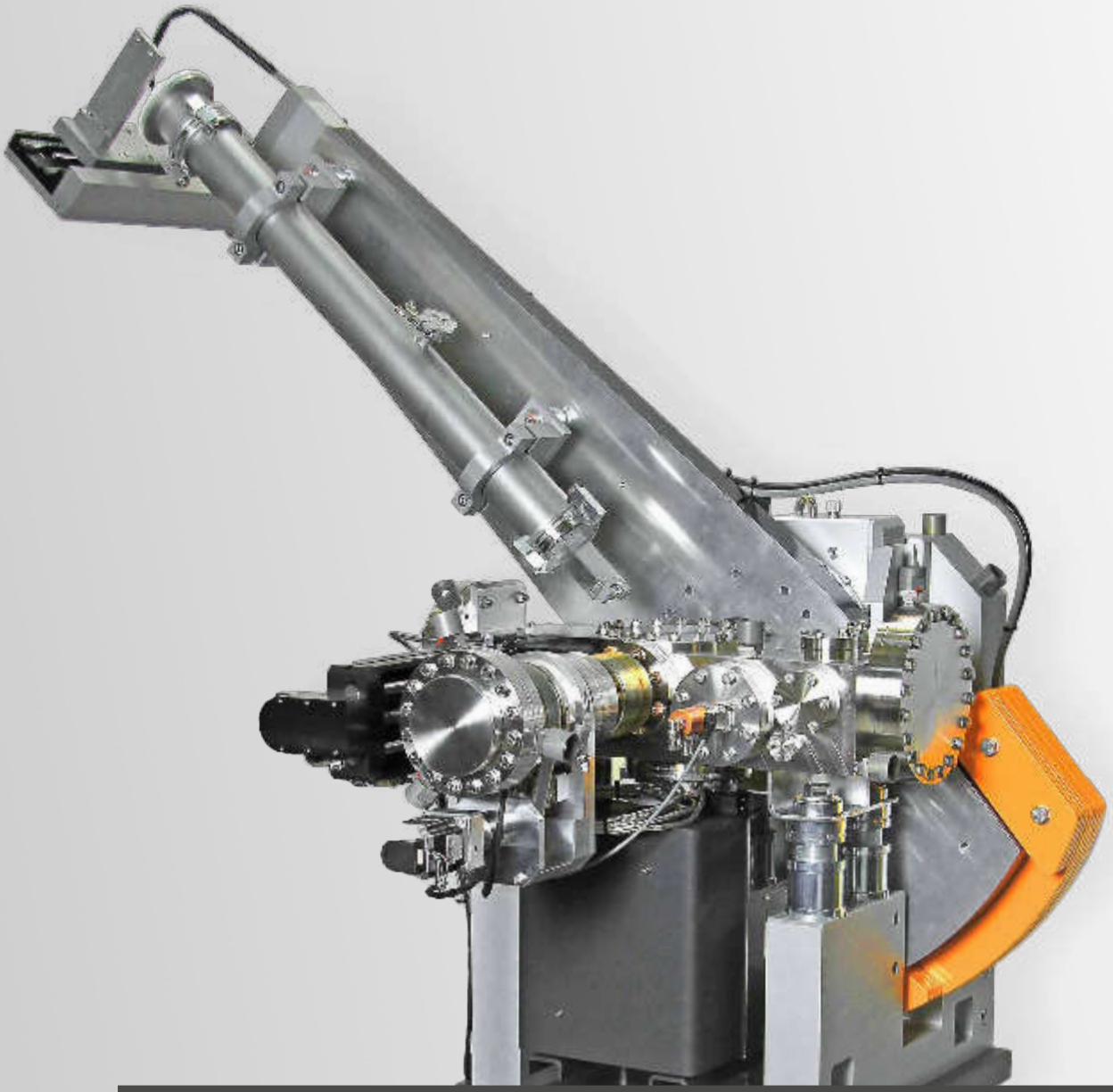


Data Sheet

FEL Spectrometer

Online hard X-ray FEL beam characterization tool
for single shot time resolution spectra

XILON

Introducing...

AXILON's hard X-ray single shot spectrometer for online spectral characterization of the free electron laser beam. This system acquires a full high-resolution FEL spectrum with up to 1% bandwidth in a single shot, while transmitting more than 95% of the beam undisturbed to the experiment. In a first component, the grating unit, a part of the beam is split off with a diamond transmission grating. In the crystal unit, placed about 10 m downstream of the grating unit, a bent analyzer crystal disperses the beam onto a fast 1D detector, with precise angular adjustment of crystal and detector.

Grating unit

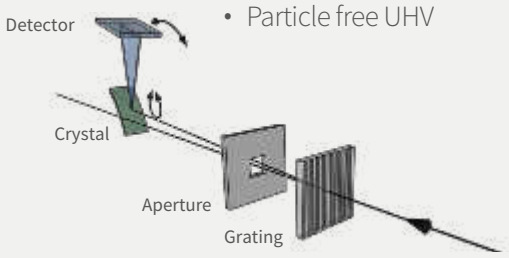
- Up to four exchangeable diamond transmission gratings
- Grating rotation for efficiency optimization
- Adjustable absorber to select zero and first diffraction orders
- Grating and absorber cooled

Crystal unit

- Up to five exchangeable bent crystals (passively cooled)
- High precision crystal and detector rotation for energy selection
- Vacuum flight tube between crystal and detector to minimize scattering and absorption
- Motorized detector platform for different exchangeable detectors
- Whole system can be adjusted to the beam position

Key features

- Beam to experiment transmitted practically undisturbed
- Reliable, high precision movement of the optics components
- Absolute in-vacuum measurement of crystal rotation
- Two exchangeable detectors
- Particle free UHV



parameter	value
Energy range	5 - 20 keV
Energy resolution	>4 x 10^4
Optics adjustment range	100 mm (H), 10 mm (V)
Crystal rotation axis range	15°…60°
Crystal, detector rotation resolution	0.002°
Vacuum	10^{-9} mbar

Axilon AG
Emil-Hoffmann-Str. 55-59
50996 Köln • Germany

T +49 (221) 165 324 00
F +49 (221) 165 324 99

beamlines@axilon.de
www.axilon.de