Focusing at BL43LXU

A. Baron, Updated February, 2020

High-(meV-) Resolution Spectrometer, 10m Arm

Bent Cylindrical Mirror *(usual operating conditions)*

Beam Size: **~ 45 x 55 μm² VxH** FWHM (Optimized)
~ 60 x 60 μm² VxH FWHM (Typical)
Beam Divergence: **~ 0.2 x 0.5 mrad²** VxH FWHM (0.011 x 0.028 deg²)
Beam Angle: ~ 3.1 mrad, up

Multilayer KB *(~50% throughput, 2+ days setup, 17.8 keV and 21.7 keV)*

Beam Size: **~ 5 x 5 μm²** FWHM
(optimized size varies between ~4.5x4.5 and 6x7 μm² – tell staff if this difference is critical)
Beam Divergence: **~ 5 x 7.5 mrad² VxH**
Beam Angle: ~ 27 mrad, up

Notes for the MLKB setup:
Installation needs 2+ days and *must* be arranged in advance -> consult beamline staff.
The setup reduces the range of angular motion of the sample in the cradle.
The setup limits the free space upstream of the sample position to ~80 mm.
Increased beam divergence will affect the spectrometer momentum resolution.

Compound PLEM μ-Focus *(~70% throughput, ~1 day setup time – Mostly not used any more but **might** be possible)*

Beam Size: **~ 12 x 15 μm²** VxH FWHM
Beam Divergence: **~ 1 x 2 mrad² VxH**
Beam Angle: ~ 2 mrad, down

Notes for the PLEM (Prism Lens & Elliptical Mirror) μ-Focus setup:
Installation needs ~1 day and *must* be arranged in advance -> consult beamline staff.
The setup reduces the range of angular motion of the sample in the cradle.
Increased beam divergence will affect the spectrometer momentum resolution.
Tails can be an issue.
Only vertical or only horizontal focusing is possible.

Medium-(25 meV-) Resolution Spectrometer, 2m Arm

Beam Size: ~ 20 x 30 μm² VxH FWHM (Optimized)
Beam Divergence: ~ 0.2 x 0.7 mrad² VxH FWHM (0.011 x 0.040 deg²)
Beam Angle: ~ 6 mrad, up