

XAFS beamlines for $E > 2$ keV (excluding energy-dispersive setups)

[K.Klementiev state of 13.10.2006]

CM=collimating mirror, FM=focusing mirror, HFM (VFM)=horizontally (vertically) focusing mirror, DCM=double crystal monochromator, ChC=channel-cut, SB=sagittally-bent, KB=Kirkpatrick-Baez, WC=water-cooled
Current in bold = top-up.

Location,	E_c (GeV)	Max I (mA)	Beamline	Source	Crystals, E range (keV)	Flux at sample	Beam size at sample (HxV)	optics	SB 2 nd	
Europe										
ALBA	3	400	XAFS	MPW80, $E_c=10.4$ keV B=1.74T	Si(111), Si(311) 2.4 – 35 (focused) – 65	10^{13} @9keV 5×10^{11} @30keV 5×10^{10} @50keV	0.2x0.1(9–35keV) 8x0.4(30–65keV)	CM (Si,Rh,Pt) DCM LN2-cooled (both) flat, FM (Pt,Rh dual toroid)		
ANKA	2.5	180	ANKA-XAS	BM 1.5 T ($E_c = 6$ keV)	Si(111), Si(311) 2.4 - 25	1×10^{10} ph/s/cm ² at 9 keV	20 mm x 2 mm	DCM, Planar Zerodur		
BESSY	1.7	240	DIP 01-1B	BM ($E_c = 2.5$ keV)	InSb (111) 1.674 - 15 Si (111) 1.997 – 15 Si (311) 3.817 – 15 Si (422) 5.639 – 15	$\sim 1 \times 10^{11}$ ph/s with Si (111) at 9 keV	0.4 x 0.6 mm ²	toro M, DCM		
Diamond	3	300 (500)	DIP-09-2		SiGe 111 graded 4 – 15	1×10^{10} ph/s at 10 keV	250 x 600 μ m	DCM 1 st WC, cyl. M w. bender, Rh-coated		
			B18 (Core EXAFS)							
			I20 (XAS-3)	5m 1.6T 100-pole permanent field MPW	Si(111) and (311) 4–35 keV	7.5×10^{13} ph/s Si(111) at 10keV	1.5 mm x 125 μ m	1.5m Pt coated CM + plane M Direct LN ₂ cooled twin-axis M, 1.5m Pt coated toroid M+ plane M (+EDE)		
Elettra	2.0–2.4	330	I18-microfocus	U27 2m ($K=2.0$)	???. 1.5-20	1×10^{14} s ⁻¹ in 0.1% bw at 10 keV	<1 μ m x <1 μ m	FM, DCM with interchangeable crystals, KB Cylindrical prefocusing M, DCM		
ESRF	6	200	BL 11.1 (XAFS)	BM 1.2T ($E_c=3.22$ keV)	Si(111), Si(311) 2.3 - 25					
			BM1B (Swiss - Norwegian CRG)		Si (111) 6 – 41			35x3 mm ² unfocused	M, ChCM WC, M	
			BM8 (GILDA)	BM ($E_c = 19.2$ keV)	Si (311) and (511) 5 – 85	$10^{10} - 10^{11}$ ph s ⁻¹	1 x 2 mm ²	CM, DCM SB 2 nd crystal, cylinder M	U	
			BM20 (Rossendorf)		Si (111) and (311) 6 – 33			CM, DCM, FM		
			BM25 (Spline)	BM ($E_c = 9.6$ keV)	Si (111) and (311) 5 – 45	10^{12} ph/s	0.1 x 0.1 mm ²	CM Rh coated, pseudo ChC DCM 1 st WC and 2 nd SB, cylinder M	U	
			BM26 (DUBBLE)		Si (111) and (311) 5 – 30			CM Pt coated DCM cylinder M Pt coated		
			BM29		Si(111), (220), (311), (511) (not easily exchangeable) 4.5 – 74			DCM crystals are He-gas cooled No mirrors		
			BM30 (FAME)	BM 0.85T	Si(111) and (220) 4 – 40		280 μ m x 150 μ m	CM Rh coated, DCM LN ₂ cooled 1 st and SB 2 nd , cylinder M	U	
			ID26		Si(111) and Si(220) 2.4–27	$> 10^{13}$ ph/sec	New K-B mirror system to be commissioned soon	HDM1, water-cooled, Pt, Si and Cr – coatings, Cryo-cooled DCM (Kohzu), bimorph HFM2 and bimorph HVFM3		

HASYLAB DORIS III	4.45	140	A1	BM Ec=16.6	Si(111) or Si(311) 2.4 – 17, 11 – 32	10^9 ph mm ⁻² s ⁻¹ at 9 keV	Typical 8 x 1 mm ²	ChC (2 and 4 crystal mode), water-cooled mono, No mirrors 1 st crystal indirectly water-cooled Mirrors not yet installed toroidal, 4 segments, total length 1800 mm, Au-coated, T-controlled 1 st crystal of DCM toroidal Au-coated, plane (C,Ni,Au-coated), DCM DCM, no mirrors			
			C	BM Ec=16.6	Si(111) or Si(311) 2.3 – 22, 4.4 – 43.4	10^9 ph mm ⁻² s ⁻¹ at 9 keV	30 x 10 mm ²				
			D2 (EMBL)	BM Ec=16.6	Si(111) or Si(220) 5 – 30		5.0 mm x 1.5 mm				
			E4	BM Ec=16.6	Si(111) 2.7 – 12	10^{10} ph/s at 7 keV	6.0 mm x 0.6 mm				
			X1	BM Ec=16.6	Si(111), Si(311) and Si(511) 6 – 80	2×10^9 ph mm ⁻² s ⁻¹ at 9 keV; 7×10^8 ph mm ⁻² s ⁻¹ at 19 keV	20 x 10 mm ²				
MAX-LAB MAX-II	1.5	250	I811 (material science)	SMPW65, 3.5T, $K=20$, $P_{tot}=5$ kW, $E_c = 5$ keV	Si(111) and (311) (not easily exchangeable) 2.4 – 20	2×10^{15} ph/s/ 0.1% bw at 10 keV	Typically 0.5 mm x 1.0 mm (v x h)	Si CM Rh coating , DCM with adaptive water-cooled 1 st and SB 2 nd , cylinder zerodur	U		
SLS	2.4	300	SuperXAS	Apple II undulator UE54, $K=0.8 - 2.5$ minigap in-vacuum U19	Beryl, KPT, YB ₆₆ , InSb (111) Si(111) 0.8 – 8 Si(111) and Si(311), 5 – 20	2×10^{12} ph/s 2×10^{12} ph/s	1 μ m x 1 μ m 1 μ m x 1 μ m	Ni-coated spherical and double-plane mirrors, DCM, KB Toroid Rh-coated, DCM LN ₂ cooled 1 st , KB			
			microXAS								
Soleil	2.75	500	MARS	MPW ($K=32$) $E_c =$ 15 keV	3.5 – 50						
			XAS BL15 SAMBA	BM BM BM, $E_c = 8.65$ keV	4 – 40 3 – 25 Si(111) and (200) 4.6 – 43				CM, DCM1 with SB 2 nd , DCM2 without focusing, cylinder M	U	
SRS	2	250	4.2	Wiggler I Wiggler I Supercond. Single- Period 6T Wiggler	Ge(111), InSb(111) or Si(311) 1.8 – 10 Si(111) 4 – 10.5	3×10^{11} ph/s/100mA		Plane M: uncoated, Pt-coated, Cr-coated, cyl bent M, DCM Plane M,: Pt-coated, DCM: 1 st water cooled, 2 nd SB DCM; 1 st water-cooled, KB CM Pd-coated, DCM 1 st WC, CM, DCM SB, FM	U		
			7.1		BM			2.5x2 mm ²		U	
			9.2			Si111, 5.5 – 18	$\sim 10^9$ ph/s	$\sim 50\mu$ m			
			9.3 16.5			Si(111) Si(220) 6 – 30 7 – 40		10 mm (H)			
America											
ALS	1.0 – 1.9	400	10.3.2 12.2.2	BM Superbend 6T	Si(111) 2.5-17 Si(111) 5–35 W/B4C multilayers	9×10^9 ph/s 3.5×10^{11} ph/s @10keV	16 x 7 μ m 115 x 78 μ m (hv)	Toro+parabola, 4CM, CM, DCM: 1 st water cooled, FM			
APS	7	100	5-BM-D 9-BM	BM BM	Si(111) 4.5-80 Si (111), Si(220) twin 2.1-30 keV	1×10^{11} @15 keV	1mm x 1mm				
			10-ID	Undulator A	Si (111) 4.8-32 Si(333) 15-90						
			11-ID-D	Elliptical MPW	Si (220), 4-40	1×10^{12} @10 keV	Focused 1000 μ m x 500 μ m Focused 1x1 mm ² Unfoc 10x1 mm ²				
			12-BM	BM	Si (111) 2.4-22 Si (333) 7.5-100		unf 50mm x 4mm; Foc 10 μ m x				
			13-BM	BM	Si (111) 7-70						

CAMD CLS	1.2 – 1.5 2.9	300 500	13-ID	Undulator A	Si 111 4-45		30µm Unf 3mm x 1mm Focus1 60x20µm ² Focused2 2x2µm ²	2DCM's, Si(111) and Si(400), 1st crystals cryo-cooled, 2 nd SB ; VFM (ULE glass)
			18-ID	Undulator A	3.2-14; 9.6–42	1.64 *10 ¹³ ph/s (@12 keV)		
			20-BM	BM	Si (111) 2.4-29	1 x 10 ¹¹ @10 keV	Unf 30mm x 1mm Foc 1000x 50µm ²	
			20-ID	Undulator A	Si (111) 4-27 Si (311) 9-50	1 x 10 ¹³ @10 keV	Unf 1mm x 3mm	
LNLS NSLS	1.37 2.8	250 280	5B (HXMA) 06ID-1 SXRMB	SC wiggler BM	Si(111) 5 – 40 InSb (III) 1.7 – 10	6 x 10 ¹¹ ph/s >1 x 10 ¹¹ ph/s/0.1%bw 3 x 10 ⁹ ph/ (s mrad) @ 6 keV	0.1 x 0.5 mm ² 0.3 mm x 0.3 mm	
			D04B-XAS	D04B (15°)	Si(111) 3 – 12 Si(220) 5 – 24	5 x 10 ¹¹ ph/sec @ 10 keV	10x1.5 mm ²	Si 111 ChC
			X9B	BM	Si(111) 4 – 11.4 Si(220) 5.3 - 18.8	~10 ¹⁰ ph/sec @ 10 keV	0.35 x 0.2 mm ² (focused)	Cylinder, DCM SB crystals
			X10C	BM	Si(220) 3.5 – 24.7	~10 ¹⁰ ph/sec @ 10 keV	10x0.5 mm ²	DCM, Rh-coated bent toro,
			X11A	BM	Si(111) 4.5 – 26 Si(311) 8 – 35	1 x 10 ¹¹ ph/sec @ 10 keV	10H x 0.5V (unfocused)	channel-cut
			X15B	BM	Si111, Ge111, Si220, Si311, InSb, Beryl 0.8 – 15	~1 x 10 ¹² ph/sec	~1x1 (@ <3 keV)	Pt-coated glidcop, DCM 1 st cooled, Pt- coated ULE (fused silica) toroid
			X18B	BM	Si(111) 4.8 – 40	1.0 x 10 ¹⁰ ph/sec @ 8 keV	25.0 x 1.5mm ²	channel-cut
			X19A	BM	Si(111) 2.1 – 16.5	5 x 10 ¹⁰ ph/sec @ 2.5 keV; 1 x 10 ¹¹ ph/sec @ 10 keV	2 x 1mm ²	Rh-coated glass spherical, DCM, Rh-coated glass toro
			X23A2	BM	Si(311) 4.9– 30	10 ¹⁰ ph/sec @ monochromator bandpass @ 10 keV, 100mA, 2.5 GeV)	25.0 x 1.0mm ²	DCM
			X23B	BM	Si(111) 3.8 – 11	5.0 x 10 ¹¹ (@ 8 keV, 2.8 GeV, norm. to 250 mA)	2.0 x 2.0mm ²	Pt-coated silicon collimating, DCM, Pt- coated quartz toroidal
SSRL SPEAR-3	3	100	2-3	1.3T BM	Si(111), Si(220) or Si(400) 2.4 - 30		15 x 2.0mm ²	Unfocused, DCM
			3-3	BM	Si(111) 2.08 – 4		2.5 x 1mm ²	Ni-coated bent cylinder Silicon, DCM variable exit height
			4-1	8-pole, 1.8T Wiggler	Si(111), Si(220), Si(400) 2.4 – 35		20.0 x 2.0mm ²	No optics, tiny hutch
			4-3	8-pole, 1.8T Wiggler	Si(111), Si(220), Si(400) 2.4 – 35		Unf 20 x 2.0mm ² Foc 20 x 0.15mm ²	Elliptical, Pt-coated
			6-2	54-pole, 1.0T	2.05 - 32		Unf 20 x 2.0mm ²	Bent cyl, Corning 7940, Pt-coated

			7-3	Wiggler 8-pole, 1.8T Wiggler	Si(111), Si(220), Si(400) 2.4 - 35		Foc 4 x 0.5mm ² 20.0 x 2.0mm ²	LN ₂ -cooled monochromator Bent flat, Corning 7940, Ni-coated No optics	
			9-3	16-pole, 2.0T Wiggler	4.6 - 40		20.0 x 2.0mm ²	LN ₂ -cooled monochromator (two cuts)	
			10-2	30-pole, 1.45T Wiggler	Si(111) phi=90° or Si(220) phi=90°		Unf 20 x 2.0mm ² foc 0.45 x 0.2 mm ²	Bent cylinder, fused quartz, Rh-coated, Si single-crystal, DCM LN cooled	
			11-2	26-pole, 2.0T Wiggler	4.5 - 37		Unf 30 x 3.0mm ² foc 3.0 x 0.5 mm ²	LN ₂ -cooled monochromator (2 cuts)	
Asia									
BSRF	2.2	100	BL - 4W1B XAFS	Single period wiggler 4W1, 1.8T, E _c =5.8 keV	Si 111, 220, or 311 4 ~ 22	1.5 × 10 ¹⁰ ph/sec / 0.1% b.w	10×1 mm ²	DCM, no mirrors	
NSRRC (TPS)	1.5	240	BL01C	SC Wavelength Shifter	6 – 33	1 × 10 ¹¹ ph/sec	0.9 × 0.2 mm ²	CM, DCM, FM	
			BL15B	BM	Si(111), InSb(111), Beryl(1010) 1 – 9	3 × 10 ¹¹ ph/s	1 × 0.5	CM water-cooled glidcop, DCM, bent toroidal glidcop FM, high-order- harmonic rejection mirror	
			BL17C	Wiggler 20 (1.8T)	Si(111) 4 – 15	10 ⁹ ~ 10 ¹⁰ ph/s	8 × 3	water-cooled CM, DCM, water-cooled bent toroidal	
			BL20B	BM	Ge(111) Ge(220),. 3.5 ~ 12		20 mm × 10 mm	no mirrors, DCM	
PAL	2.5	180	SP12B (@Spring-8)	BM (E _c =28.9)	Si(111) 5 – 70	5 × 10 ¹⁰ - 10 ¹² ph/s	0.25 × 0.25 mm ²	dual-strip (Rh+Si) CM, variable-inclined DCM,	
			3C1 EXAFS	BM (E _c =5.5 keV)	Si(111) 2 – 13 Si(333) 6 – 40	10 ⁹ -10 ¹⁰ ph/sec	20 mm × 10 mm	toroidal Rh-coated FM DCM, harmonic rejection M	
PF (KEK) PF-SR	2.5	400	8C1	BM (E _c =5.5 keV)	Si(111) 3~22	10 ¹² ph/sec	unf 40 x 2 mm ² foc 0.5 x 0.2 mm ²	CM, DCM SB 2 nd , FM	∪
			BL-7C	BM	Si(111) 4 – 34 Si(311) 6 – 34	1 x 10 ¹¹ ph/s	1.5 x 1 mm ²	DCM w SB 2 nd , focusing double fused quartz M.	∪
PF (KEK) PF-AR Spring-8	6.5 8	60 100	BL-8B	BM	InSb(111) and Si(311) 1.7 – 21	5 × 10 ¹⁰ ph/s at 1800 eV	1.9 mm x 0.5 mm	DCM, no mirrors	
			BL-9A	BM	Si(111) 2.1 - 15	4 x 10 ¹¹ ph/s at 9 keV	1 x 0.35 mm ²	Rh-coated CM, DCM, Rh-coated FM, double M Rh- and Ni-coated	
			BL-9C	BM	Si(111) 4 – 16 Si(311) 6 - 23	7 x 10 ¹⁰ ph/s	1 x 1 mm ²	DCM, Rh-coated bent cyl FM	
			BL-12C	BM	Si(111) 5 – 16 Si(311) 6 - 23	5 x 10 ¹⁰ ph/s	<1 mm x 1 mm	DCM, bent cyl Rh-coated FM	
NW10A	Linear MPW#13-W Ec=6.24keV BM, Ec=26.3 keV	Si(111) 4~29	1x10 ¹² /s.mm ² @11keV	~5mm x ~1.5mm	DCM w SB 2 nd , no mirrors	∪			
BL01B1 BL19B2			Si(311) 8 - 42	6 x 10 ¹⁰ ph/s at 25keV	0.5 mm x 1.1 mm	DCM, Pt-coated FM			
				3.8 – 113 5 – 100	10 ⁹ – 10 ¹¹ ph/s ~10 ⁹ ph/s		Rh-coated CM, DCM, Rh-coated FM DCM, double M		

SSLS Helios-2	0.7	500	XDD	BM 4.5T	Si (111) 2.3-10	5.6×10^{10} ph/s @8 keV, focused	$3.1 \times 0.8 \text{ mm}^2$	Pt coated, bent conical CM, ChC mono, Pt coated bent conical FM	
Australia									
Boomerang	3	200	XAS	MPW100, 1.9T, $E_c=11.6 \text{ keV}$, $P_{\text{tot}}=8.5 \text{ kW}$, 2m, 14mm, power in $2 \times 0.25 \text{ mrad}=2.5 \text{ kW}$	Si(111) 4–36 Si(311) 5.5 –~ 50 Si(333) > 50 700 W	$> 10^{12}$ ph / s		Si, Rh and Pt stripes CM, LN2 cooled (both crystals) DCM, Dual toroid FM	

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