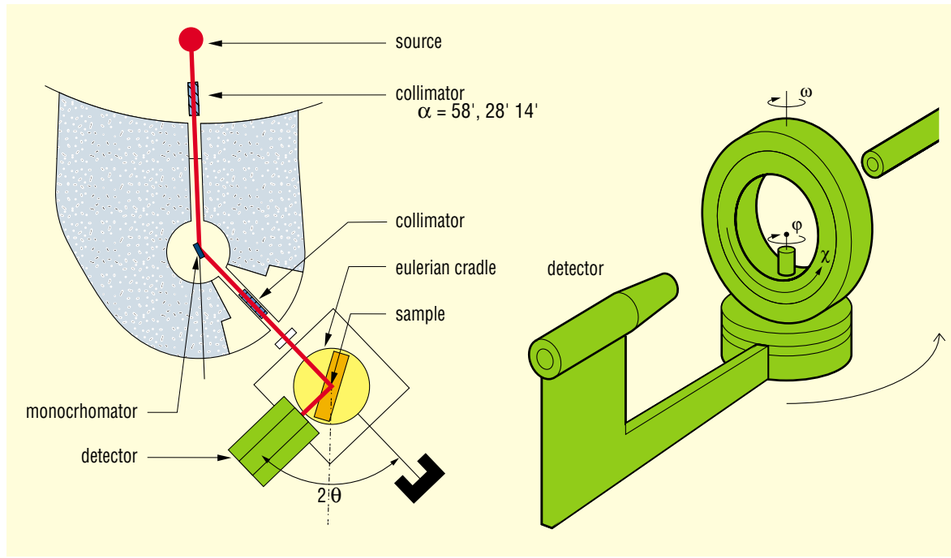
Beam tube	5 C2 (hot source)
Monochromators	Cu (220) and GeSi (311), adjustable vertical focusing
Type of instrument	centric Eulerian cradle (Stoe)
Max. flux at specimen (n/cm^2 s)	5.7 x 10^6 (λ = 0.835 Å, α_1 = 58')
	5.0 x 10^6 (λ = 1.112 Å, α_1 = 58')
Max. beamsize at specimen	$\varnothing$ = 15 mm
Incident wavelength	0.835 Å (Cu 220), Erbium filter
	1.112 Å, GeSi (311)
λ/2 contamination	< 0.1% for λ = 0.835 Å
	0 for λ = 1.112 Å
Angular range	-100° ≤ 2Θ ≤ 130°
	-60° ≤ ω ≤ 65°
	-180° ≤ χ ≤ 180°
	-180° ≤ φ ≤ 180°
Collimation α_1	58', 28' or 14'
Resolution	$\Delta\omega$ = 0.12°(FWHM) at 2θ = 40° for λ = 0.835 Å
	$\Delta\omega$ = 0.20°(FWHM) at 2θ = 40° for λ = 1.112 Å
Detectors	^{3}He detector, position sensitive detector under construction
Data collection and instrument control system	PC (LINUX), modified and extended DIF4N software
Ancillary equipment	★ cryostat and furnace (5 K < T < 1400 K)

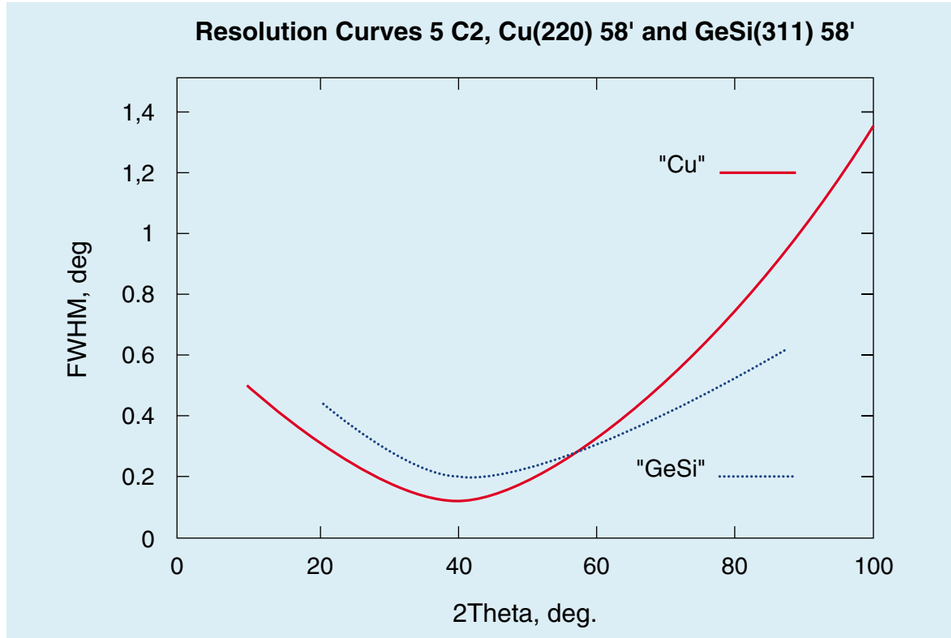
The purpose of this four-circle diffractometer is the measurement of Bragg-reflections for the evaluation of structure factors. It allows to determine crystal structures and magnetic structures of twinned or untwinned single crystals. Typical applications are the localisation of hydrogen in inorganic and organic compounds, the analysis of disordered crystal structures and anharmonic displacement parameters, structural phase transitions, magnetic structures, high-Tc superconductors or related materials, and quasicrystals. The shorter wavelength is used to study small unit cells (V < 2000 Å^3) up to high (sin θ/λ) values, which allows to obtain very precise information on thermal displacement parameters. The longer wavelength is used to collect data of even larger unit cells (V < 8000 Å^3) with a high resolution.

A helium cryostat and a furnace allow temperature dependent structure investigations in the temperature range from 5 K to 300 K and from 300 K to 1400 K. Special sample environments (like uniaxial or hydrostatic pressure, electric or magnetic fields) can be adapted individually.

This diffractometer was built by german scientists in cooperation between the FZ Karlsruhe and the LLB. It is currently operated by the RWTH Aachen and the LLB under the “Verbundforschung” program of the Federal Ministry of Education and Research “BMBF”.



General layout of the diffractometer 5 C2.



Resolution Curves 5 C2, Cu (220) 58’ and GeSi (311) 58’.

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