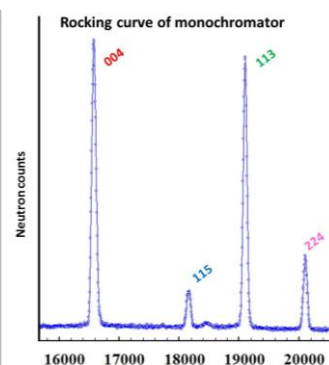
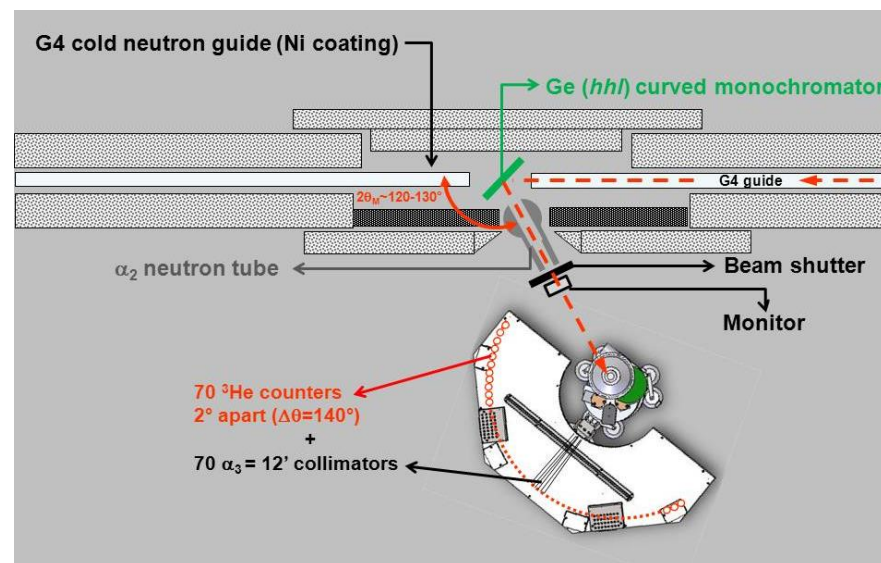


Characteristics of G4.4 diffractometer

Type of instrument	Cold, two-axis diffractometer		
Beam tube	Cold guide G4 (30 x 80 mm ²)		
Monochromator	Vertically focusing Ge (hhl)		
Incident wavelengths, relative neutron flux	(115), $\lambda=1,800$ Å	$\phi = 0.15$	
	(224), $\lambda=1,960$ Å	$\phi = 0.30$	
	(004), $\lambda = 2,401$ Å	$\phi = 1.00$	
	(113), $\lambda = 2,895$ Å	$\phi = 0.95$	
Collimation	$\alpha_3 = 12'$		
Maximum beam size at specimen	15 x 60 mm ²		
Detectors	70 ³ He detectors, $\Delta\theta=2^\circ$		
Angular range	$2\theta < 163^\circ$		
Typical step size $\Delta(2\theta)$	0.05°		
Typical acquisition time ΔT	10h < ΔT < 48h		
Typical Cagliotti Profile parameters			
$\lambda_1 = 2.34\text{Å}$	$U = 0.085$	$V = -0.172$	$W = 0.191$
Ancillary equipment			
	Cryofurnace (1.5 K - 550 K)		
	Furnace $T < 1200^\circ\text{C}$, $P \sim 10^{-4}\text{mbar}$		
	or $T < 1000^\circ\text{C}$, gas flow		



Complementary to 3T2, the G4.4 diffractometer is a high resolution two-axis diffractometer dedicated to neutron powder diffraction studies of samples with primitive unit cell volume from 1000 to 8000 Å³.

Typical applications deal with solid state physics, chemistry and material science (High-resolution refinements of nuclear or magnetic structures in the range 2K < T < 1300K, in complement to XRD or magnetic structure studies on G4.1):

- Microporous materials (Zeolites, deuterated MOFs)
- Deuterated organic compounds, pharmaceuticals, organometallics
- Magnetic materials with magnetic periods $10 < q < 30$ Å

Acquisition time is ~24h for a good quality diffractogram with a 1 cm³ sample and Ge(004) or Ge(113) wavelength.

--- G4.4 (January 2016) ---

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