

Areas are given.....	Width x height
Beam tube.....	Left beam of tangential channel 4F, aimed to cold source SF2 Radiant surface : 8 x 15 cm ² Output of the channel : 4 x 7 cm ²
Monochromator.....	Double monochromator set-up M 1 : Pyrolytic graphite $\eta = 0.4^\circ$ 11 x 8.5 cm ² allows controlled vertical focussing M2 : Pyrolytic graphite $\eta = 0.8^\circ$ 11 x 8.5 cm ²
Analyzer.....	Pyrolytic graphite $\eta = 0.4^\circ$ 6 x 6 cm ² Horizontally bent pyrolytic graphite 6 x 6 cm ²
Incident wavelength.....	$1.8 < \lambda < 6 \text{ \AA}$
Incident energy resolution.....	$300 > \delta E > 3 \text{ GHz}$
Collimation (horizontal).....	in pile : 50', 30', 15' between monochrom.(optional) : 50' others : 60', 40', 20', 10'
Range of monochromator angle (M2).....	$31^\circ < 2\theta < 149^\circ$
Range of scattering angle.....	$-5^\circ \leq \phi \leq 140^\circ$
Range of analyzer angle.....	$0 < 2\theta_A \leq 150^\circ$
Range of crystal orientation.....	$0 \leq \psi \leq 360^\circ$ $\pm 20^\circ$ double goniometer
Detector.....	³ He
Beam size at specimen.....	4 x 8 cm ²
Background.....	~0.5 count/minute

ki (\AA^{-1})	1.05	1.55	2.66
Best energy resolution (GHz)	3.6	20	120
(FWHM at $\omega = 0$) (microeV)	15	80	500
Best wave-vector resolution (FWHM) (\AA^{-1})	3.10^{-3}	5.10^{-3}	9.10^{-3}
Flux at sample (n/cm ² sec)	-	3.5×10^6	14×10^6

Ancillary equipment

- ★ Be filter (77 K)
- ★ Neutron polarization and polarization analysis
- ★ "Triple Axis Equipment Pool"
(see on front of this chapter)

4F1 and 4F2 are twin 3-axis spectrometers with very similar characteristics which are fed by a liquid-hydrogen cold neutron source

A full description of both spectrometers is given on the 4F2 page.

As an option, 4F1 can be equipped for polarized neutrons with polarization analysis.

The four intensities I^{++} , I^{+-} , I^{-+} , I^{--} corresponding to neutron spin-flip and non-spin-flip processes can be measured sequentially.

This requires the installation of an additional shielded module between the monochromator and the sample, containing a filter, the polarizing supermirror and a Mezei flipper. The supermirror can be rotated to achieve optimal alignment, yielding a polarization efficiency of 98% with a reflectivity of 55% above $\lambda = 3.5 \text{ \AA}$.

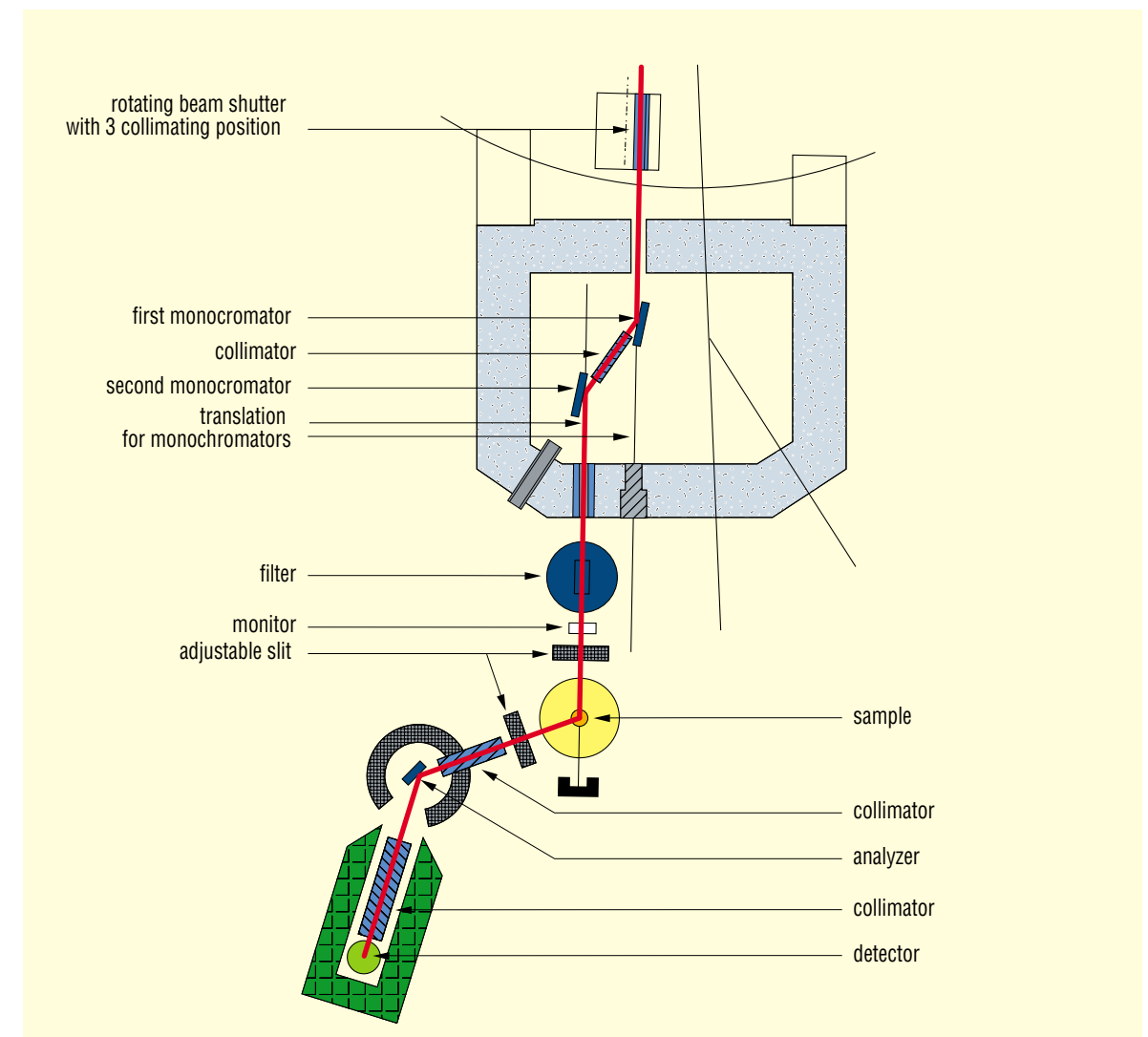
Vertical and horizontal guide fields are available.

The sample can be subjected to in a magnetic field:

- horizontal field up to 0.7 or 1.4 T (electromagnet), depending on the gap
- vertical field up to 0.14 T (Helmoltz coils) or 1.4 T (electromagnet) or 6T (cryomagnet)
- 3D-inclined guiding field of 1mT (cubic die magnet with 3 orthogonal windings).

The second flipper, made of a superconducting foil and a switched magnetic coil, is placed between the sample and the analyzer.

The horizontally curved Heusler analyzer performs both energy and polarization analysis.



General layout of the spectrometer 4F1

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