2D Detectors
Reactors & Pulsed Sources

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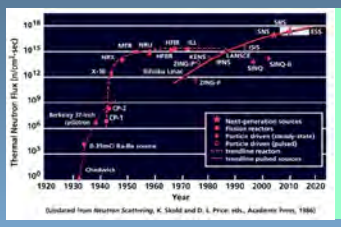
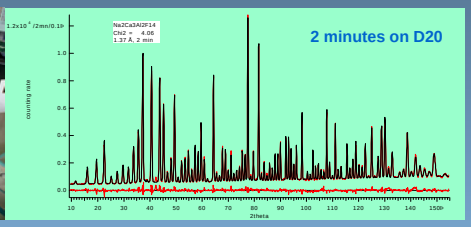
When time-average flux is more important than peak flux



Efficiency for a given resolution
= Time-average sample flux
x Sample volume
x Detector solid angle

	D20 (ILL)	GEM (ISIS)
Flux	$5x10^7$	$2x10^6$
Detector	0.27 sr	4.0 sr
Product	1.7	1.0

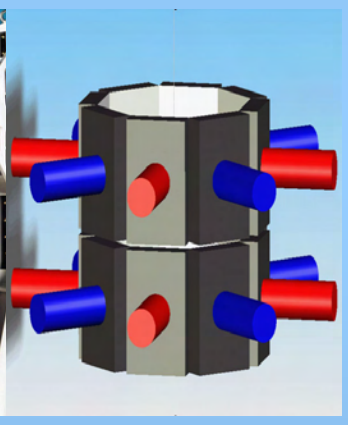


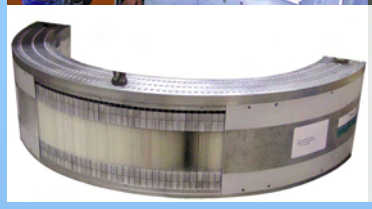
A medium flux TOF source like ISIS only competes by using big 2D detectors. What about a high flux source like ILL?

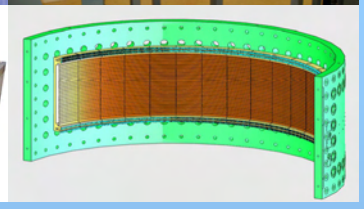
While waiting for ESS - How can ILL best compete with SNS?

- Not TOF except in special cases
- Focussing continuous flux with large $\Delta\lambda/\lambda$
- TOF depends on peak flux & rep. rate
- c.f. focussing pulsed flux with large $\Delta\lambda/\lambda$

High flux 2D-detectors for single crystals, fibres & powders

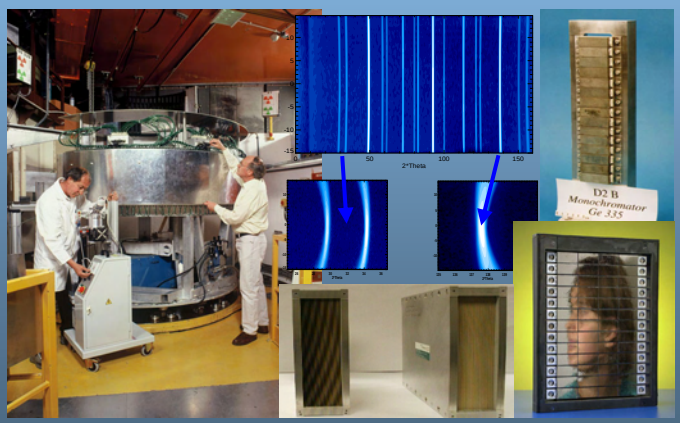


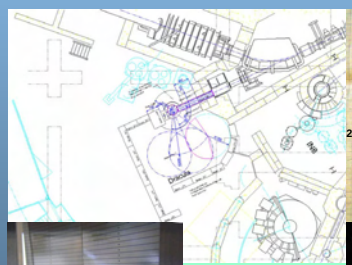


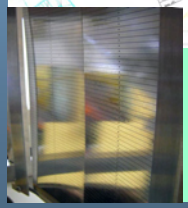


- VIVALDI – a white beam up to 10^9 n.cm^{-2}.s^{-1}
- CYCLOPS – a real-time 4π CCD detector
- D19 – a large 2D PSD for fibres & proteins
- Radial Collimators and Big Detectors

High flux 2D-detectors for powder instruments

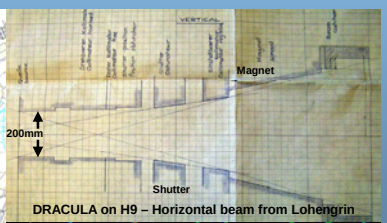




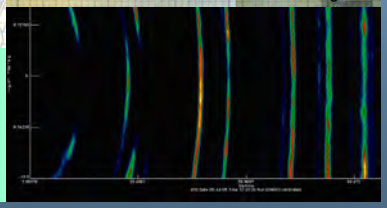


DRACULA prototype
2D detector

Texture on D19
2D detector



DRACULA on H9 – Horizontal beam from Lohengrin



- D2B – a big high resolution 2D detector
- Big monochromators and collimators too
- DRACULA – a very fast powder machine
- Chemical kinetics, small samples, texture…