

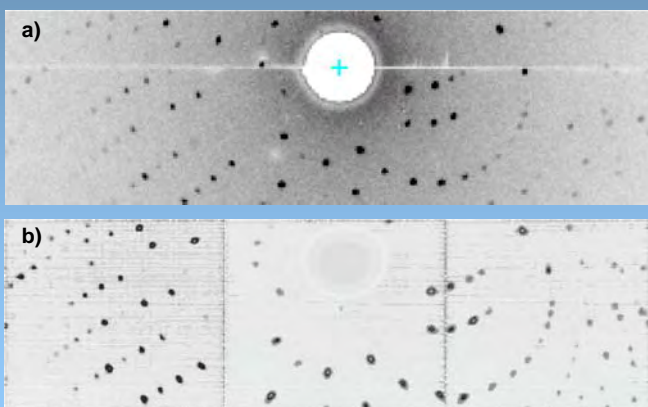
CYCLOPS, a Neutron CCD Detector

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D.Brau, D.Brau & S.York <http://www.ill.fr/dif/2000/>

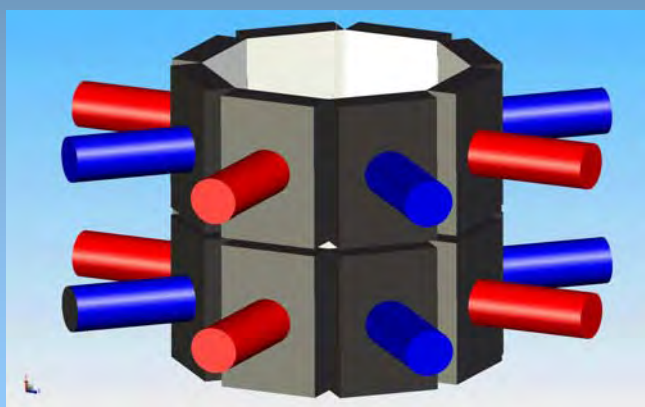


A 4π neutron detector with $>10^9$ n.cm⁻².sec⁻¹ on the sample

- An Octagonal Array of Neutron Scintillators
- x16 image-intensified cooled CCD cameras
- 20 Mega-pixels, 160x160 micron resolution
- 70% of 4π with sub-second read-out
- Focussing super-mirror thermal guide
- Real-time Reciprocal Space Surveys



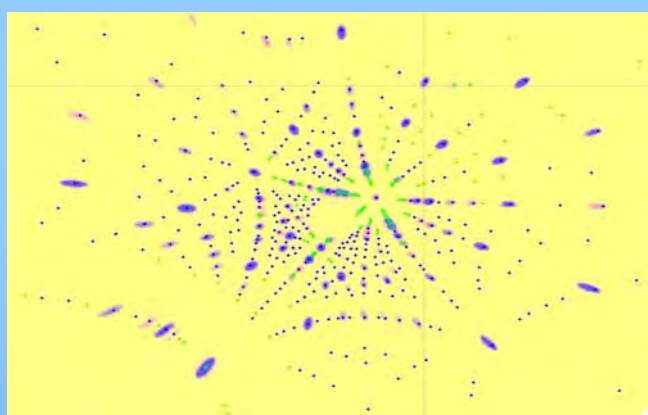
a) 12 hours Image Plate b) 1 hour D19 proto. (8mm³ lysozyme)¹



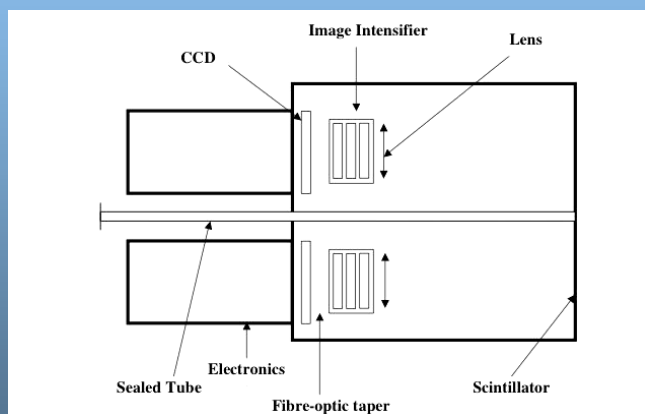
CYCLOPS, Octagonal array of x16 cooled CCD neutron detectors



OrientExpress, prototype cooled CCD neutron detector at ILL



10 sec OrientExpress exposure (Al₂O₃) auto-indexed (fine spots)



OrientExpress, image-stitching of multiple lens-coupled CCDs

APPLICATIONS OF CYCLOPS

- Real-time magnetic/structure transitions
- Photo-induced transitions
- Stroboscopic crystallography
- Modulated and incommensurate phases
- Very small single crystals
- High pressure physics

¹C.Wilkinson and B.Guerard (private communication)

- CYCLOPS will compete favourably in speed with SNS instruments like TOPAZ
- CYCLOPS will be much faster, but have higher background, than SXD-II at ISIS
- CYCLOPS will be unique for real-time exploration of magnetic & other transitions
- CYCLOPS is an example of the future for focussing super-mirror thermal guides