EUROPEAN
SPALLATION
SOURCE

Instrument Proposals

Ken Andersen

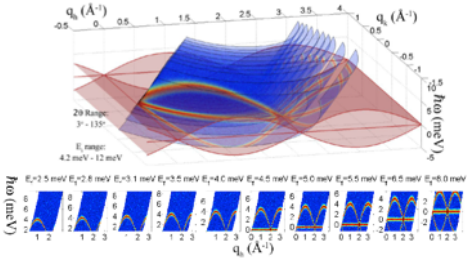
SAC 10
5 February 2014

Instrument Selection Process

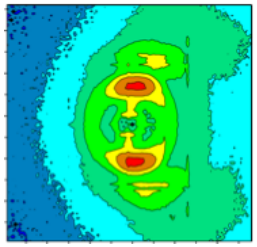
- First three instruments endorsed by Steering Committee
  - Loki broadband SANS
  - Odin multi-purpose imaging
  - NMX macromolecular crystallography
- 16 proposals submitted this round
  - 5+ next year

16 Instrument Proposals in 2013-14 Round

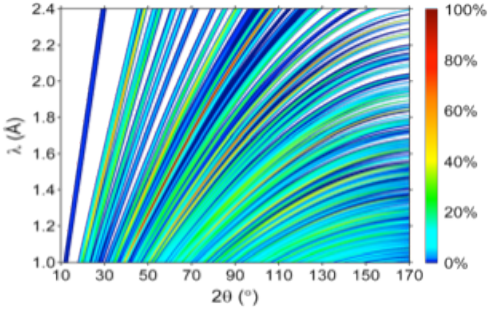
Spectroscopy



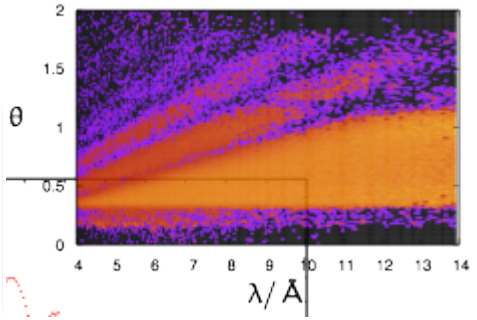
SANS



Diffraction



Reflectometry

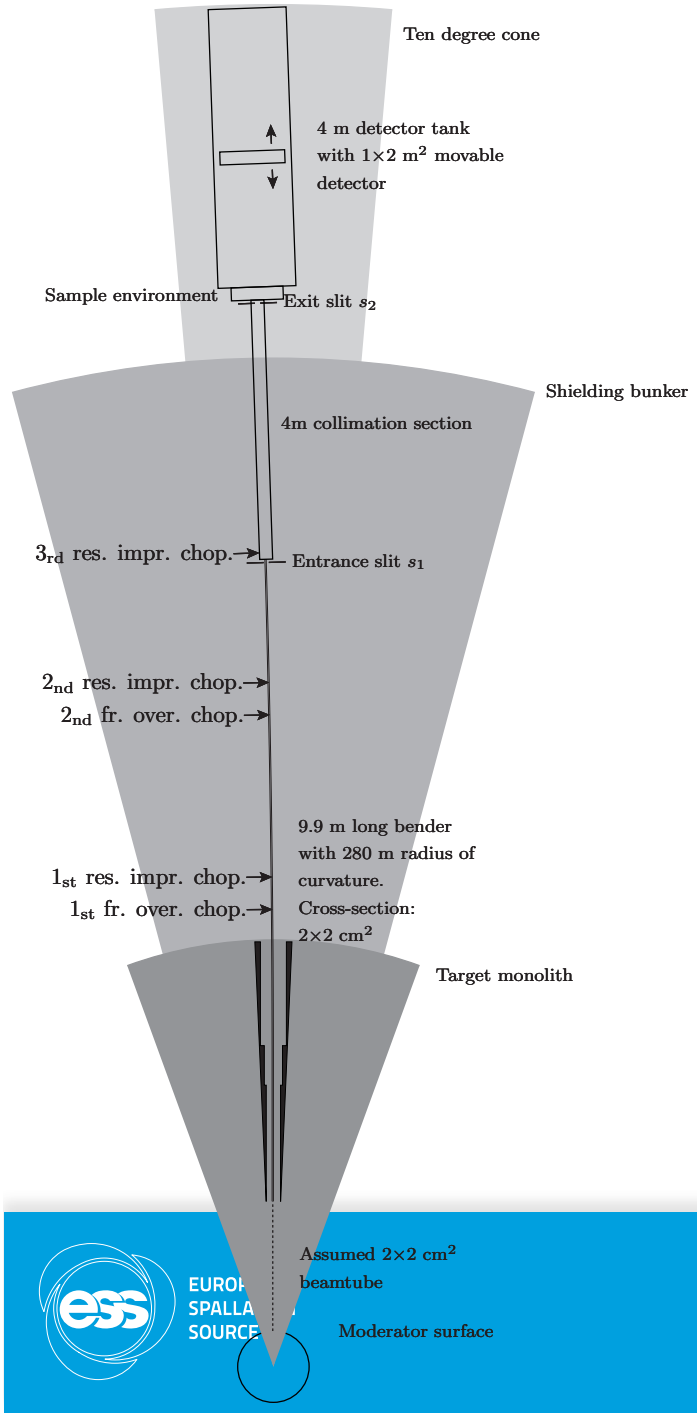


VOR	ess	Wide Bandwidth Spectrometer
T-REX	FR DE	Bi-Spectral Spectrometer
C-SPEC	FR DE	Cold Chopper Spectrometer
Tempus Fugit	IT	Time-Focusing Spectrometer
CAMEA	DK CH	Indirect Geometry Spectrometer
ESSENS	FR DE	Spin Echo Spectrometer
SKADI	FR DE	High Intensity SANS
Compact-SANS	DK CH	SANS Biology & Materials Science
BEER	DE CZ	Engineering Diffractometer
MODI	ess	Monochromatic Diffractometer
HEIMDAL	DK CH	Thermal Powder Diffractometer
POWHOW	DE	Bi-Spectral Powder Diffractometer
FREIA	ess	Reflectometer for liquid interfaces
THOR	ess DE	Horizontal Reflectometer
Voldemort	FR DE	Polarised Reflectometer
ESTIA	DK CH	Focusing Reflectometer

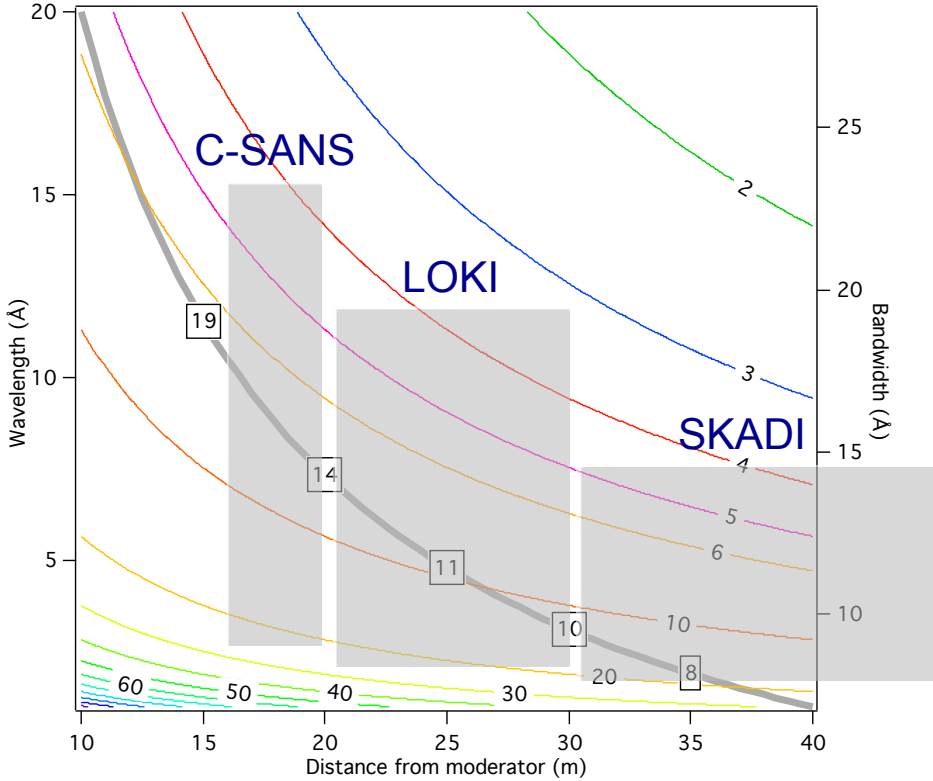
Proposal Review Meetings

- Chopper Spectroscopy 4-6/12/13
  - 4 proposals
- Spin-Echo 9/12/13
  - 1 proposal
- Fundamental Physics
  - 0 proposals
- Powder Diffraction 16-17/12/13
  - 3 proposals
- Indirect-Geometry Spectroscopy 18-19/12/13
  - 1 proposal
- Reflectometry 15-17/1/14
  - 4 proposals
- Small Angle Neutron Scattering 29-30/1/14
  - 2 proposals
- Materials & Engineering Diffraction 4/2/14
  - 1 proposal

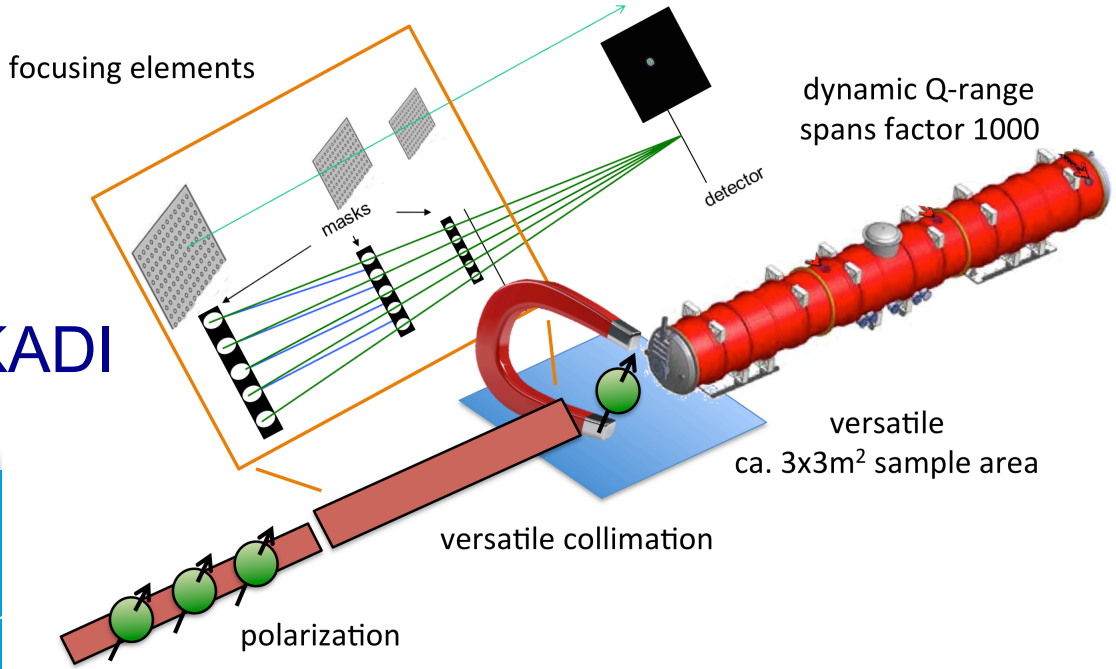
Compact SANS



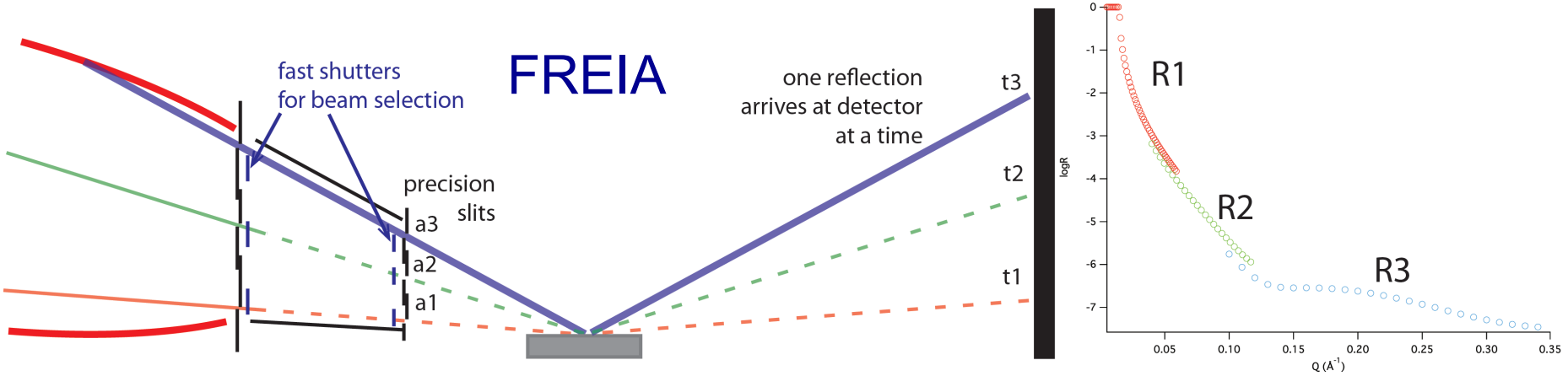
SANS

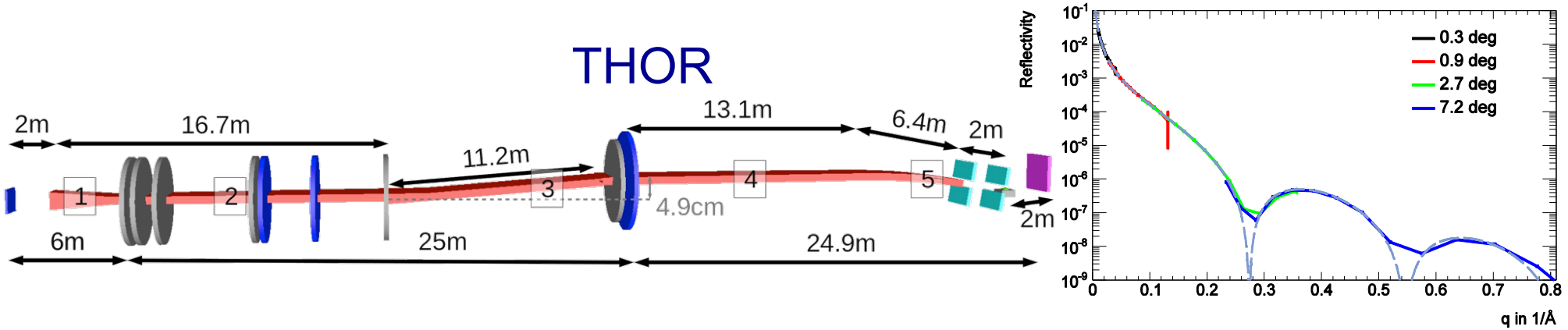


SKADI



Reflectometry: Horizontal samples





Reflectometry: Vertical samples

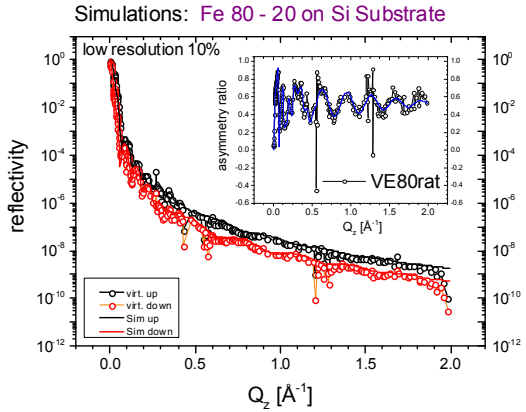
λ-θ encoding

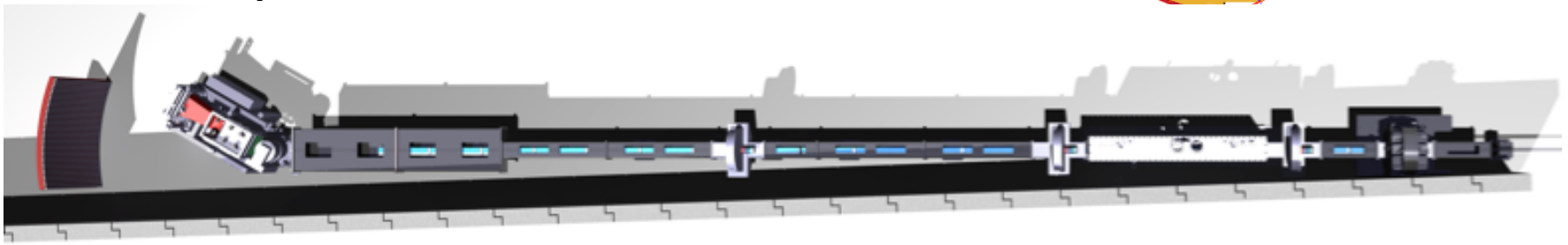
ESTIA

high-intensity specular reflectivity

almost conventional

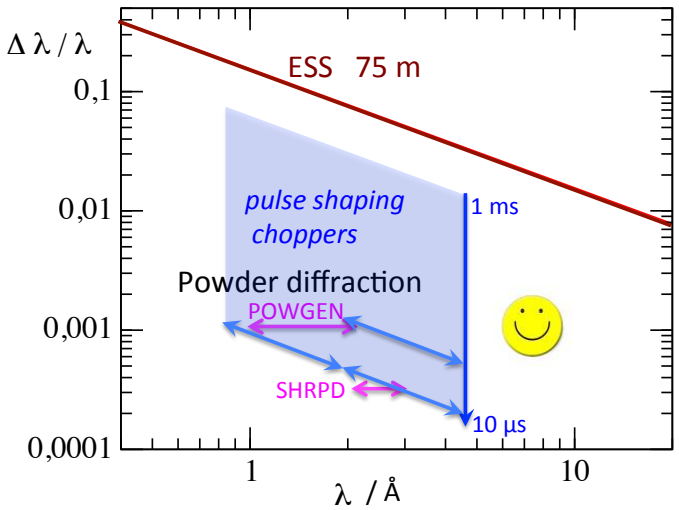
VOLDEMORT

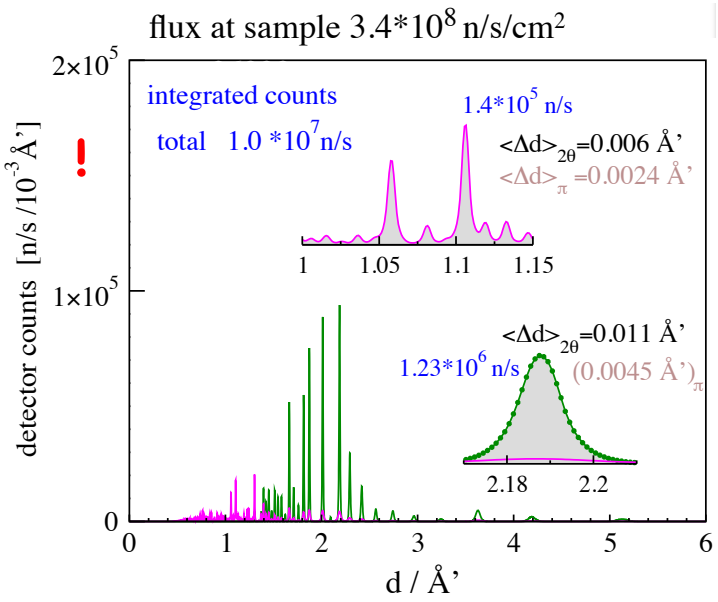


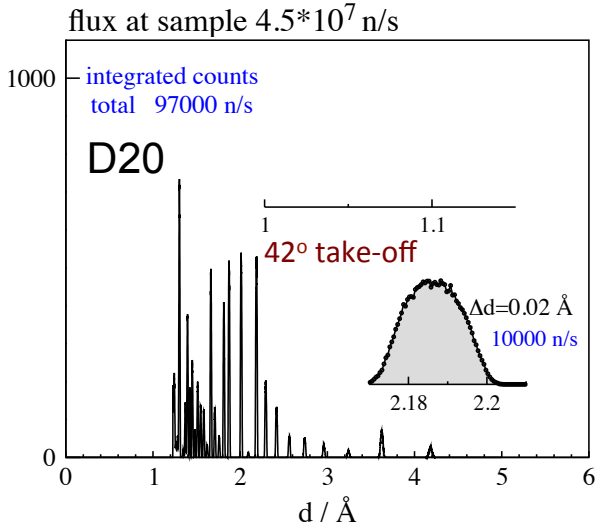


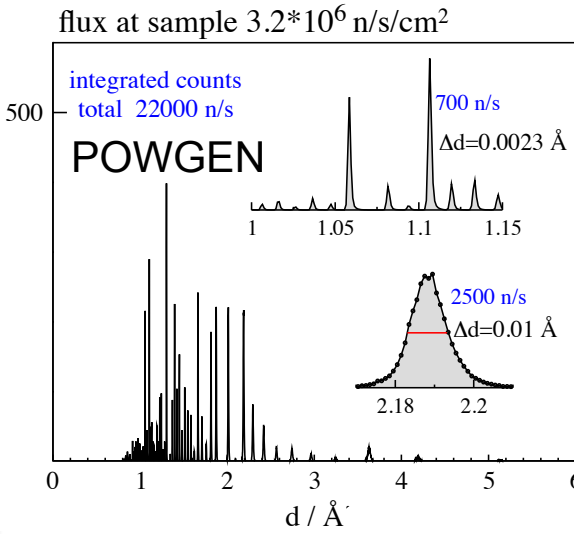
Powder Diffraction

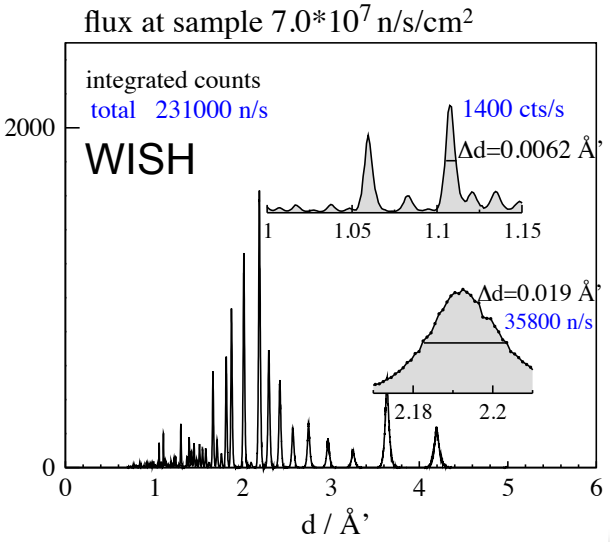
POWHOW





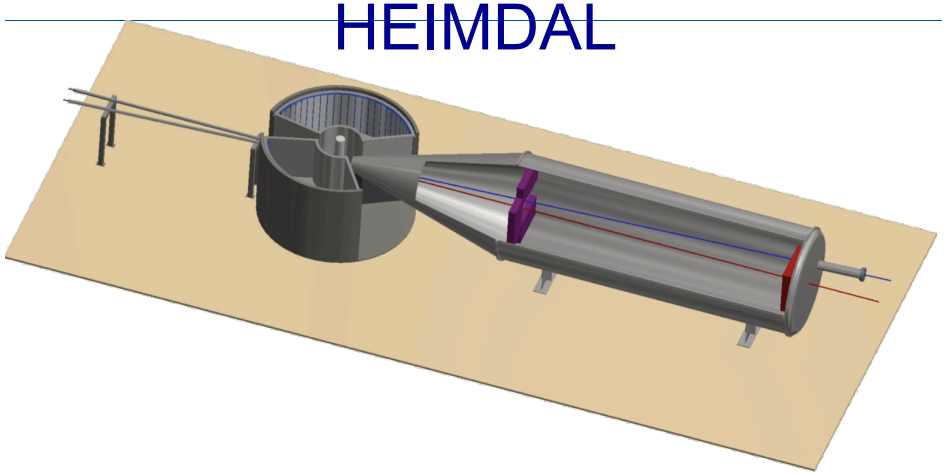


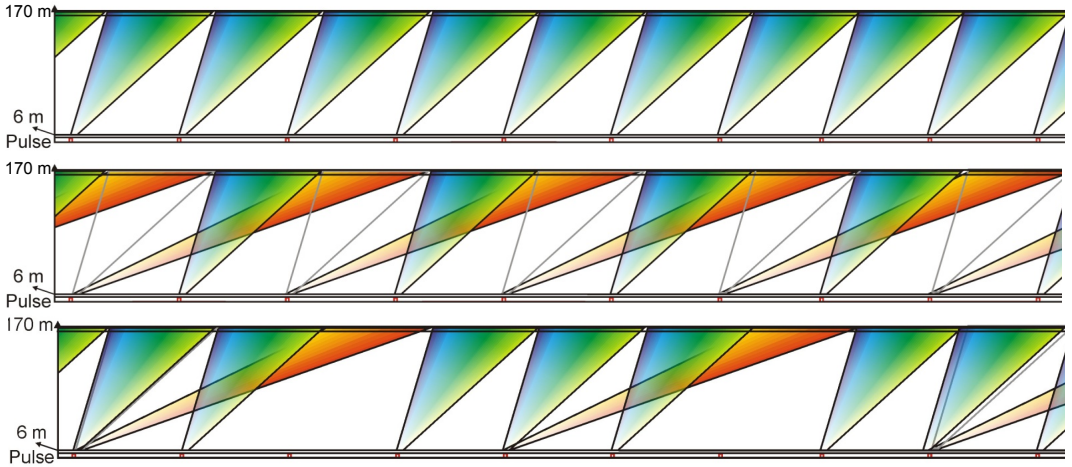




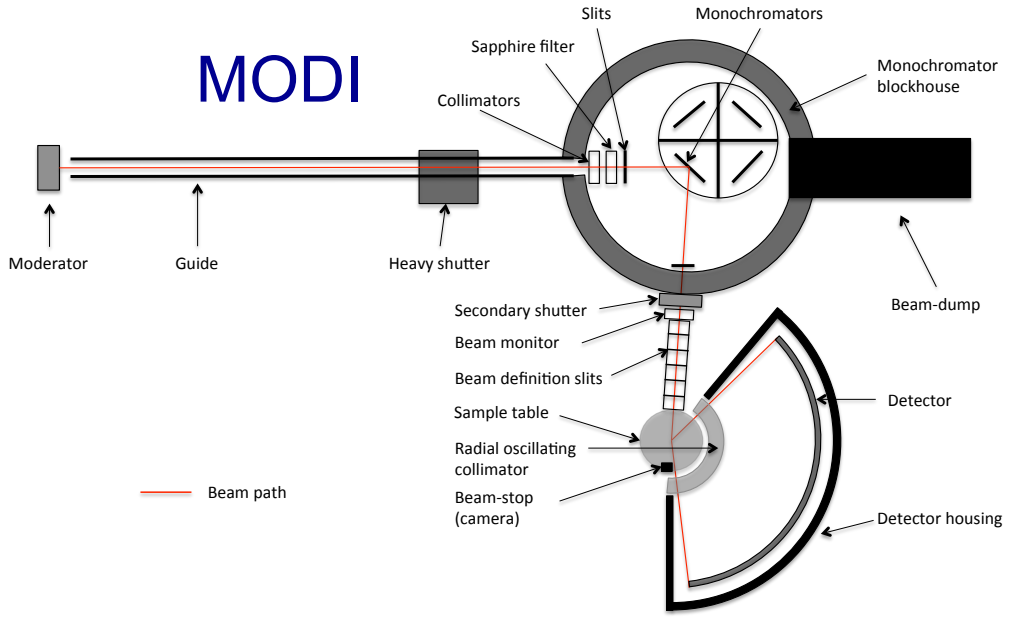
Powder Diffraction

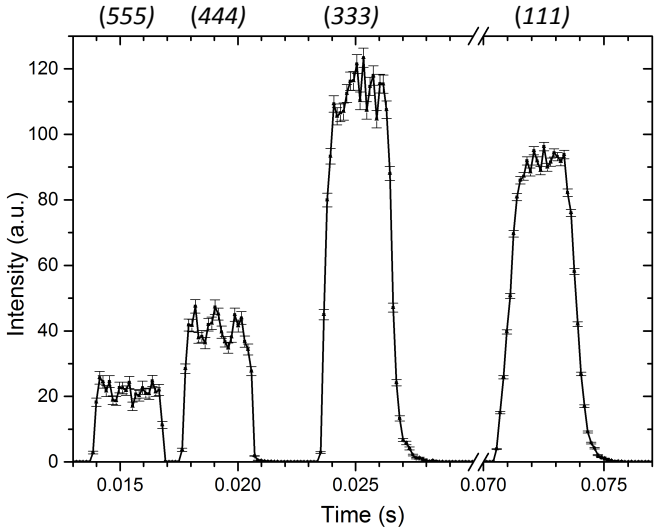
HEIMDAL





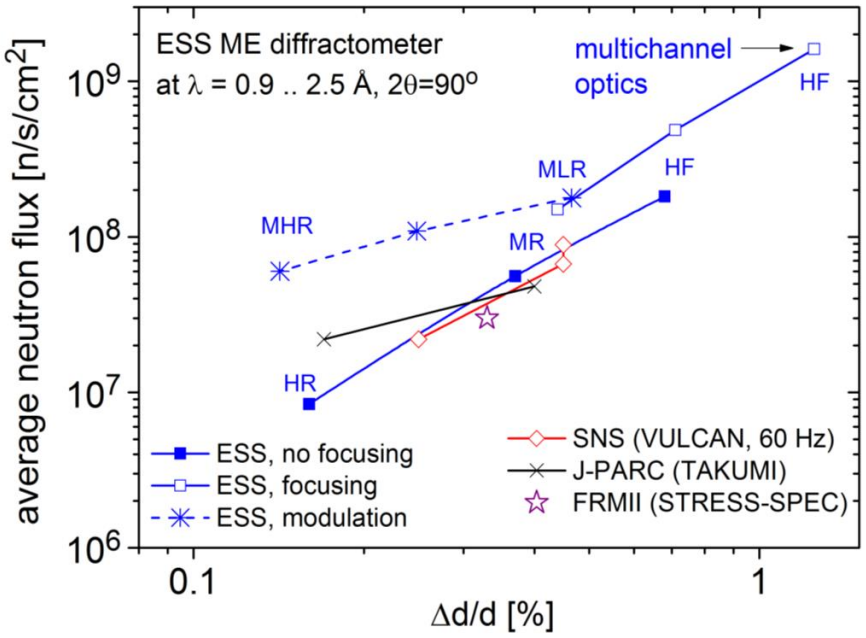
MODI

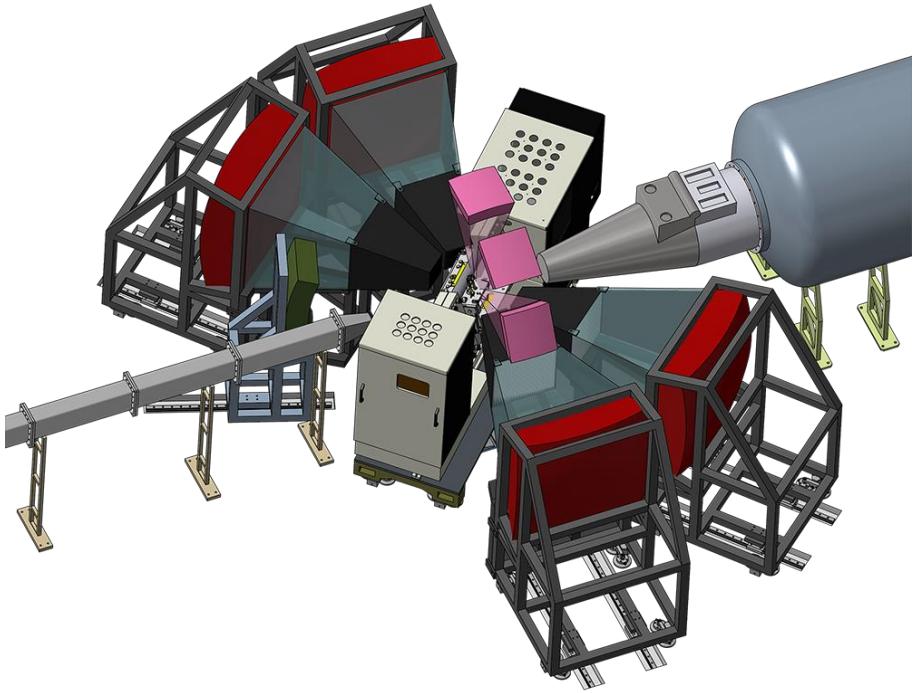


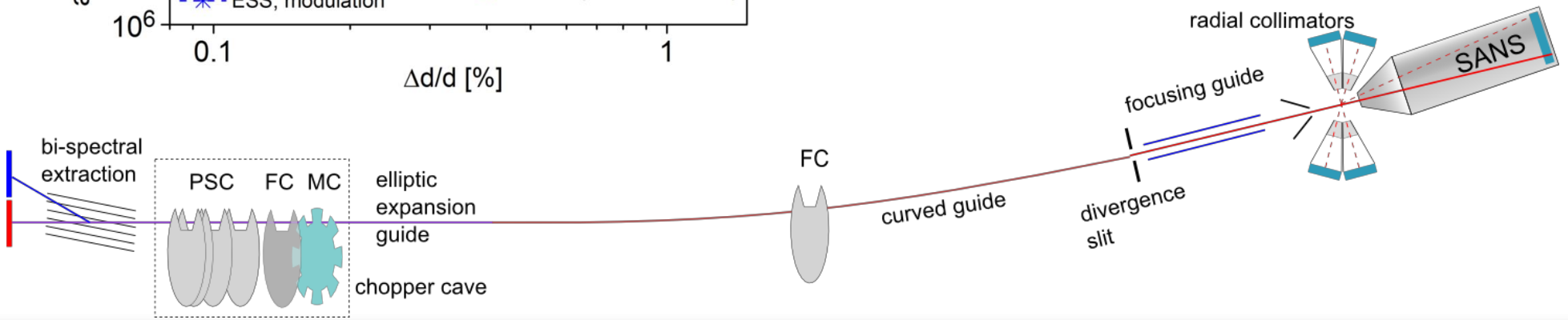


Materials & Engineering Diffraction

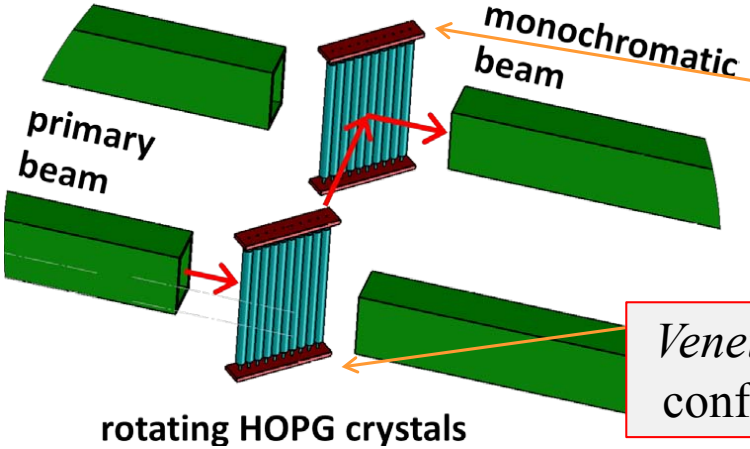
BEER



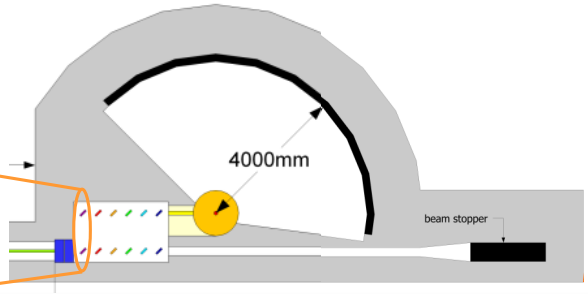




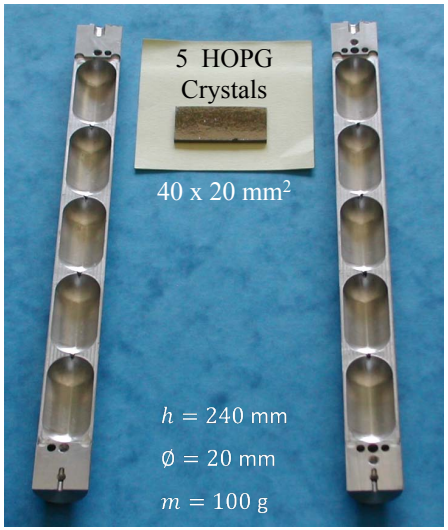
Direct Geometry Spectroscopy

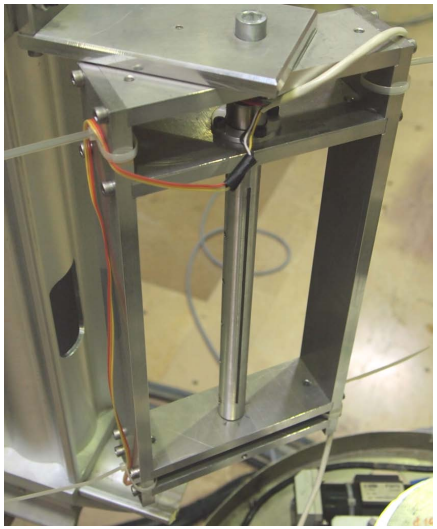


Venetian blind configuration

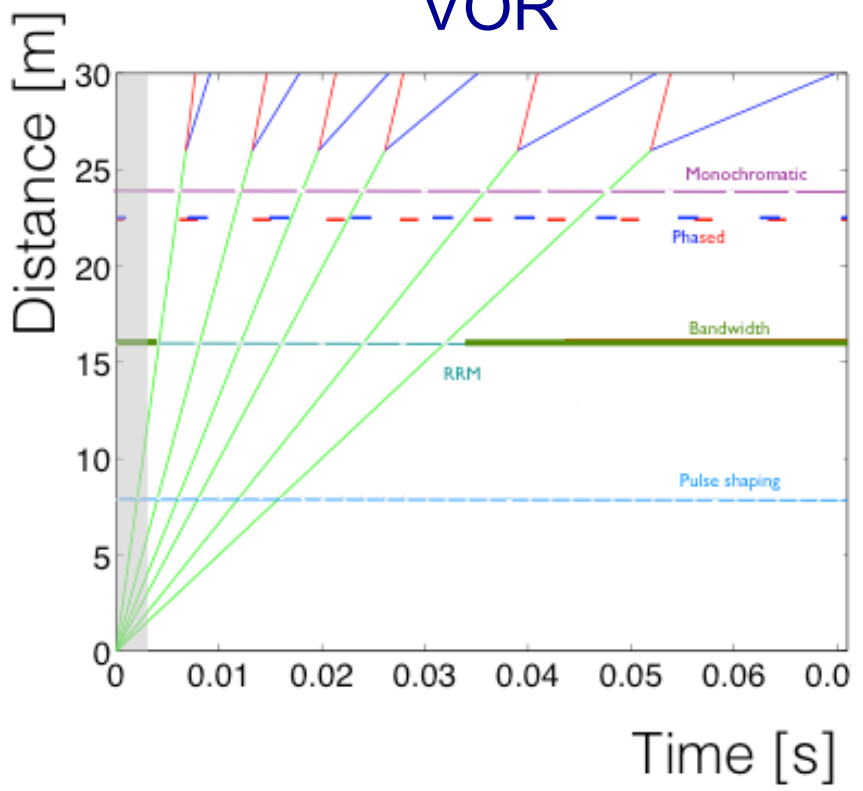


Tempus Fugit



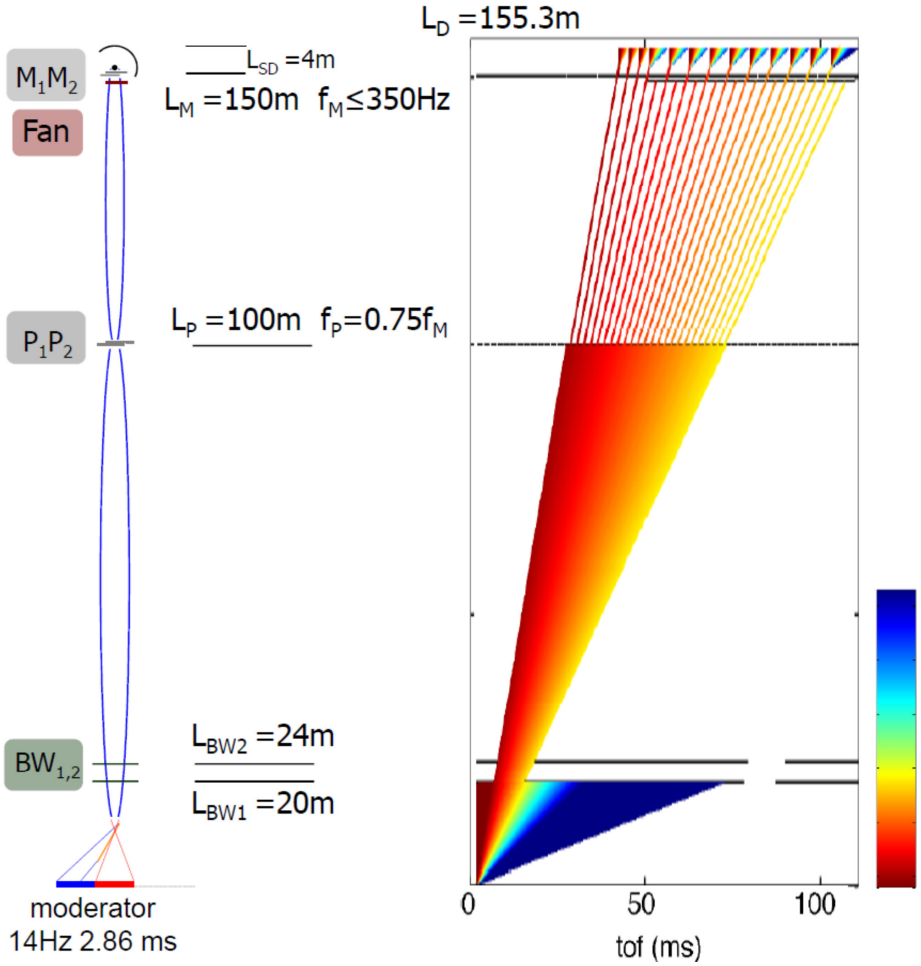


VOR

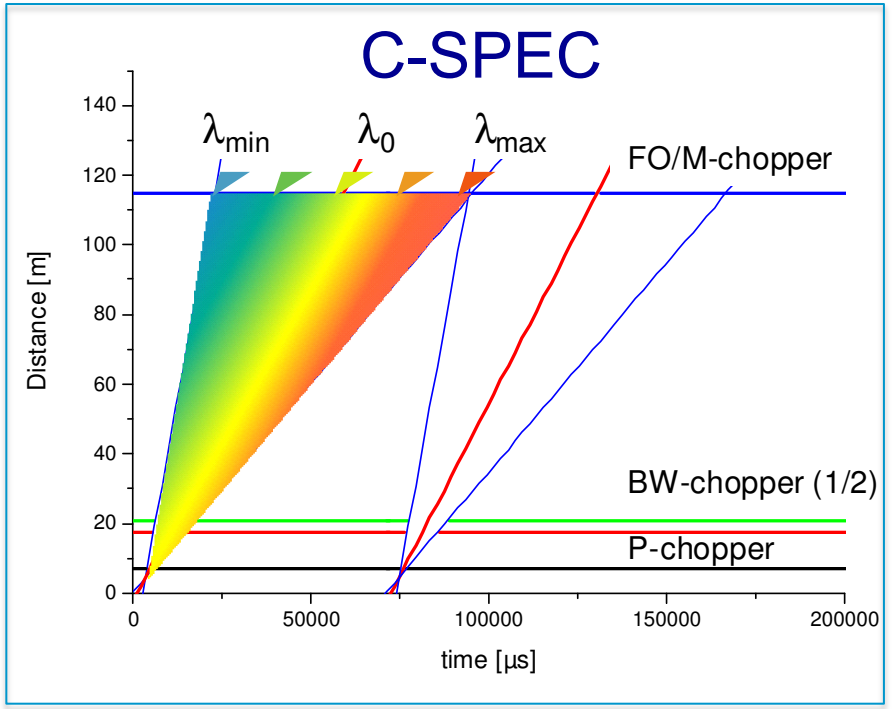


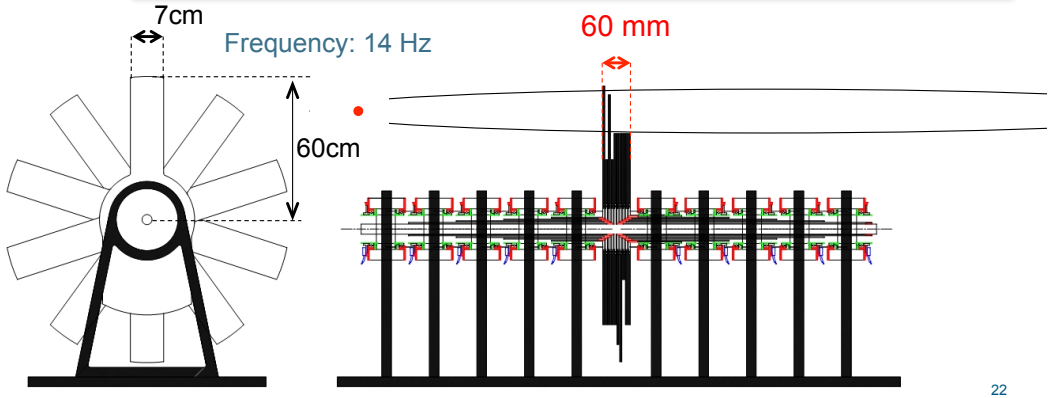
Direct Geometry Spectroscopy

T-REX



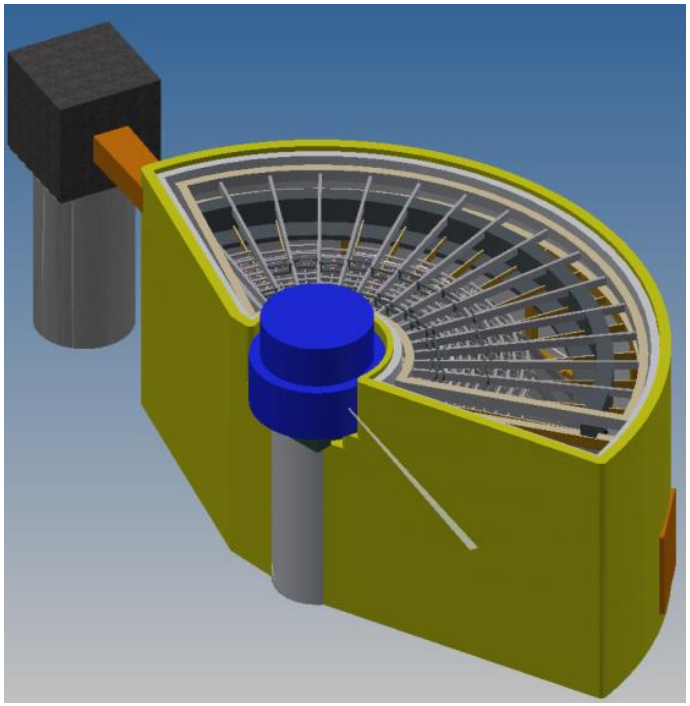
C-SPEC

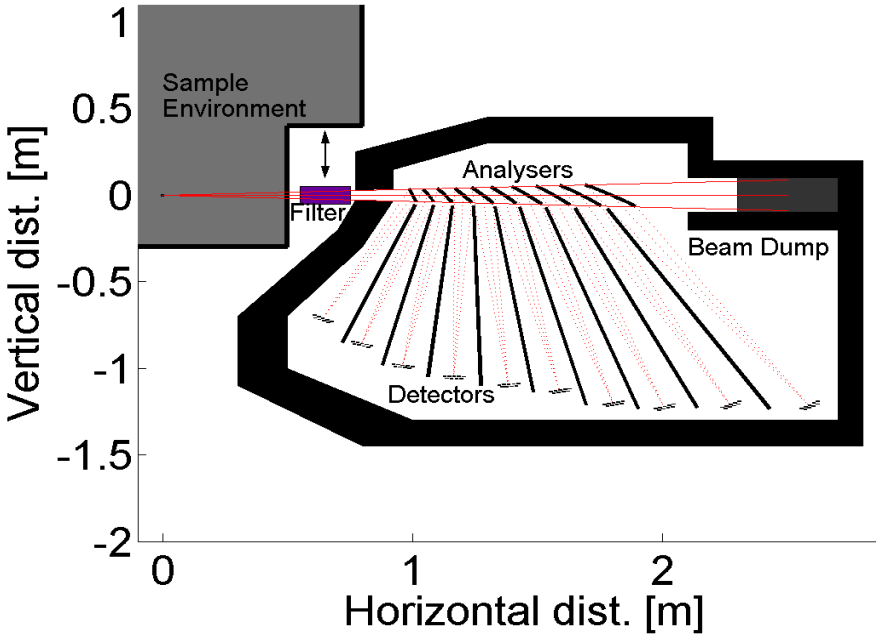


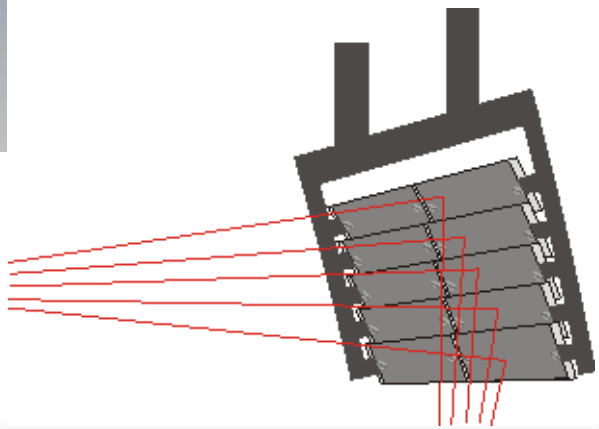


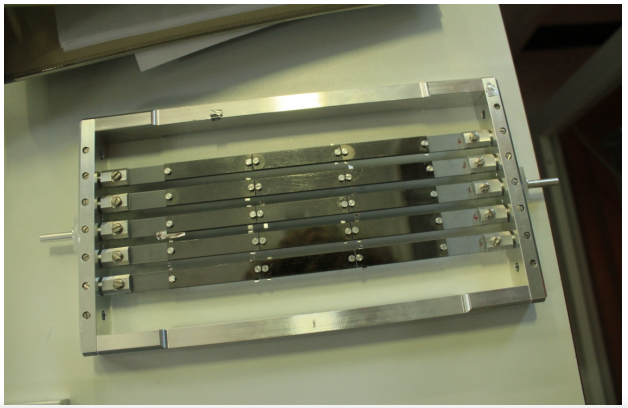
Indirect Geometry Spectroscopy

CAMEA









Neutron Spin Echo

ESSENS

Compared to IN15:

Larger guide: flux gain 3-4

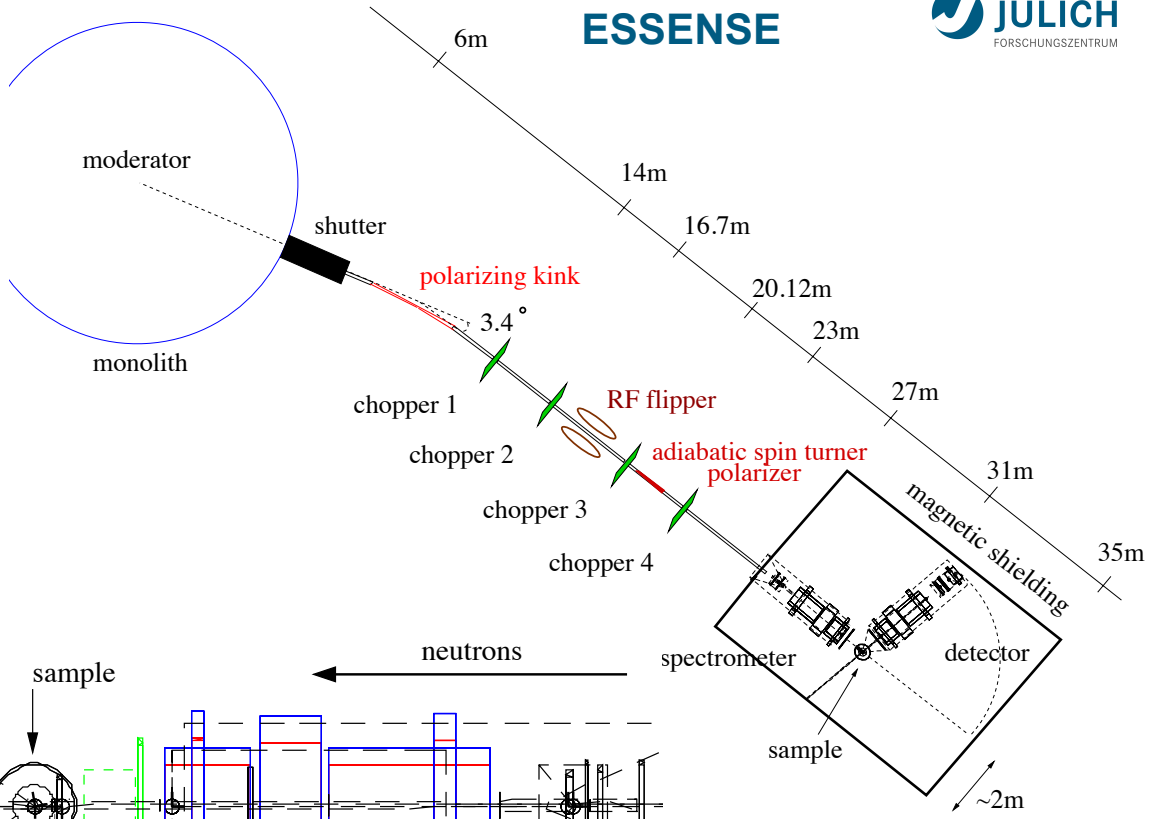
Larger Δλ: flux gain 5

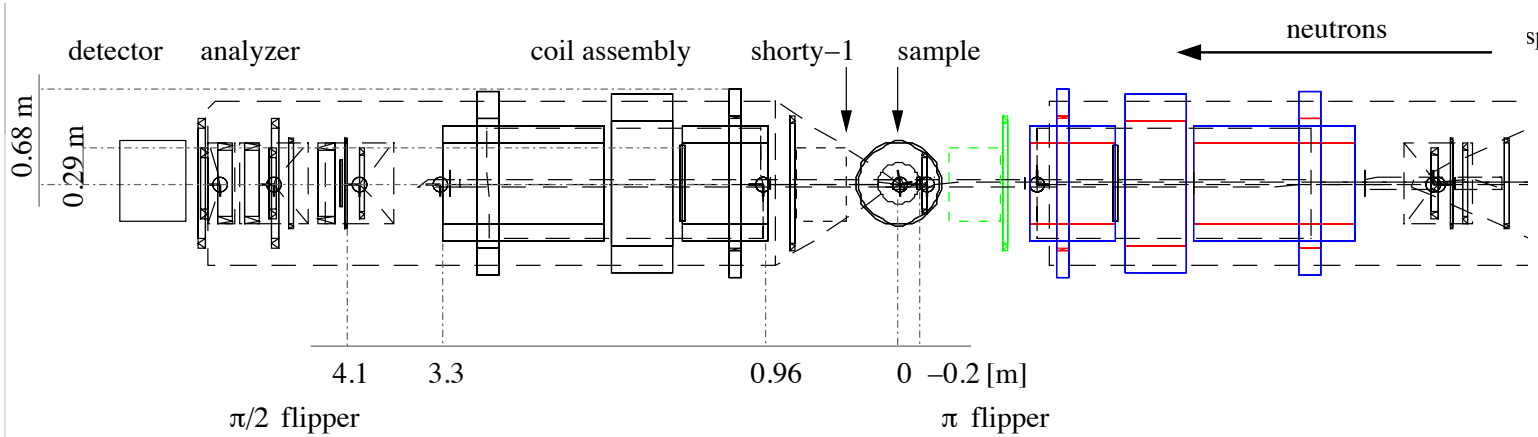
Improved coils: field gain 2-3

Total gain factor: ~100

ESSENSE

JÜLICH FORSCHUNGSZENTRUM





Expected Proposals in 2014-15 Round

- Magnetism single-crystal diffractometer (ESS,FR)
- Miracles: Backscattering spectrometer (DK,ESS)
- Vibrational spectroscopy (IT)
- Resonant spin-echo (DE)
- General-purpose fundamental physics beamline (ESS)

- + resubmissions from current round

Proposal Review Process

- Proposals sent for internal review
  - Overall: Ken Andersen, Arno Hiess, Oliver Kirstein, Mark Hagen, Sindra Petersson
  - Technical: engineering, choppers, detectors, neutron optics, electrical engineering
  - produce written internal reviews
- Proposals sent for STAP review
- Proposal review meeting
  - Chaired by STAP
  - Presentation of internal reviews
  - Discussion can be direct. Disagreements need to be addressed
- The preliminary review report (audience is proposers)
  - As soon as possible (15th Feb latest)
  - Recommendations on changes

Proposal Review Process

- Proposals sent for internal review
  - Overall: Ken Andersen, Arno Hiess, Oliver Kirstein, Mark Hagen, Sindra Petersson
  - Technical: engineering, choppers, detectors, neutron optics, electrical engineering
  - produce written internal reviews
- Proposals sent for STAP review
- Proposal review meeting
  - Chaired by STAP
  - Presentation of internal reviews
  - Discussion can be direct. Disagreements need to be addressed
- The preliminary review report (audience is proposers)
  - As soon as possible (15th Feb latest)
  - Recommendations on changes
- Proposal resubmission 31st March
  - Produce final review report (audience is SAC)
  - No traffic light. Just clear recommendation on construction
- SAC meeting in May
  - Presentations by proposer, STAP chair, ESS management
  - SAC gives high level ranking

Format of May SAC Meeting

- Assumption: all of SAC see all proposals
- 2013 Format:
  - 1:30 hours per proposal
    - Proposal presentation: 20+10 minutes
    - STAP review: 20+10 minutes
    - ESS review: 10 minutes
    - Discussions: 20 minutes
- Short Format:
  - 1:00 hour per proposal
    - Proposal presentation: 10+10 minutes
    - STAP review: 10+10 minutes
    - ESS review: 10 minutes
    - Discussions: 20 minutes
- Poster sessions for more detail and discussions
  - 1 hour for 4 proposals
- Mix & Match:
  - Short/Long formats: x16 proposals = 2-3 days
  - Poster session: 0.5 days

Format of May SAC Meeting

	May Meeting	September(?) Meeting
Option 1	16 proposals in 2-3.5 days Final Recommendations	
Option 2	8 proposals in 1-2 days Final Recommendations	8 proposals in 1-2 days Final Recommendations
Option 3	16 proposals in 2-3.5 days Identification of critical issues	Deal with critical issues Final Recommendations

Backup slides

Instrument Concepts Overview

SANS	Reflectometry	Macromolecular Crystallography	Single Crystal Diffraction	Powder Diffraction	Mat. & Engin. Diffraction	Imaging	Direct Geometry Spectroscopy	Indirect Geometry Spectroscopy	Spin Echo Spectroscopy	Fundamental & Particle Physics
Conventional SANS Skadi Full Instrument Design SD004DE/ab	Reflectometer for Liquid Surfaces and Soft Matter Thor Full Instrument Design SD003DE/a	Macromolecular Diffractometer Full Instrument Design SD036ESS	Magnetism Single Crystal Diffractom. Half Instrument Design SD060ESS	Bi-spectr. Powder Diffractometer PowHow Full Instrument Design SD005DE/b	Engineering Diffraction Half Instrument Design SD005DE/a	Multi Purp. HR Imaging 1/3 Instrument Design SD006DE	Cold Chopper Spectrom. C-SPEC Full Instrument Design SD001DE/a	Phase Space Transformers Instrument Add-on SD007DE/a	High Resolution Spin-Echo Essense Full Instrument Design SD002DE/a	Fundamental Physics Beamline Full Instrument Design SD069ESS
Small-sample SANS Design stopped SD004DE/c	Reflectometer for Magnetic Layers Full Instrument Design SD003DE/b		Magnetism Single Crystal Diffractom. Half Instrument Design SD066FR	Multi-Purpose Extreme Environ. Diffractometer Full Instrument Design SD008DE	CEED Half Instrument Design SD033CZ	Larmor Labelling in Imaging Instrument Add-on SD056NL	Bispectral Chopper Spectrometer VOR Full Instrument Design SD001DE/b	Crystal-Analys. Spectrometer CAMEA Full Instrument Design SD016DC	Wide Angle Spin-Echo Full Instrument Design SD002DE/b	Fundamental Physics In-Monolith Full Instrument Design SD069ESS
Larmor labelling in SANS Instrument Add-on SD054NL	Selene-Focusing Vertical Reflectom. Estia Full Instrument Design SD017DC/a			Hybrid Diffract. Heimdal Full Instrument Design SD019DC	Hi Flex. Mat. & Engin. Diff. Full Instrument Design SD059ESS	Multi Purp. HR Imaging 1/3 Instrument Design SD028CH	Bispectral Chopper Spectrom. T-REX Full Instrument Design SD064ESS	Backscattering Spectrometer Half Instrument Design SD039ESS	NRSE Full Instrument Design SD007DE/b	N-Nbar Oscillation Beamline Not covered
Compact SANS Full Instrument Design SD018DC	Selene-Focusing Horiz. Reflectom. Design stopped SD017DC/b			Thermal Powder Diffractometer Design stopped SD035ESS	Irradiation Beamline Not covered	Multi Purp. HR Imaging 1/3 Instrument Design SD040ESS	Crystal Monochrom. Spectrometer Tempus Fugit Full Instrument Design SD067IT	Backscattering Spectrometer Half Instrument Design SD068DK	Focusing Optics Instrument Add-on Full DU, SD007DE/c	Neutrino Physics Beamline Not covered
Broadband SANS Loki Full Instrument Design SD062ESS	Freia Horizontal Reflectometer Full Instrument Design SD034ESS			Pulsed Monochr. Powder Diffract. Modi Full Instrument Design SD037ESS			Versatile Multispectral TOF Spectrometer Full Instrument Design SD001/DE	Vibrational Spectrometer Full Instrument Design SD061IT		
VSANS/ GISANS Instrument Add-on SD065FR	Larmor Labelling in Reflectometry Instrument Add-on SD055NL			Larmor Label. in Diffr. (TOFLAR) Instrument Add-on SD057NL			Thermal Chopper Spectrometer Full Instrument Design SD038ESS/a	Q – TAS Farm Full Instrument Design SD062ESS Not covered		
Simulation software development, general simulations, supporting GER simulations, VITESS SD015DE										
General simulations, in-house supporting simulations, interface moderator-beam extraction, McStas SD022DK										

Blue = Stopped
Red = Not Covered

Yellow = Proposed 2013-14