



EUROPEAN
SPALLATION
SOURCE

Optimization of Moderators and Instruments

Ken Andersen

Pancake moderator meeting
12 February 2014

Welcome!

Welcome!

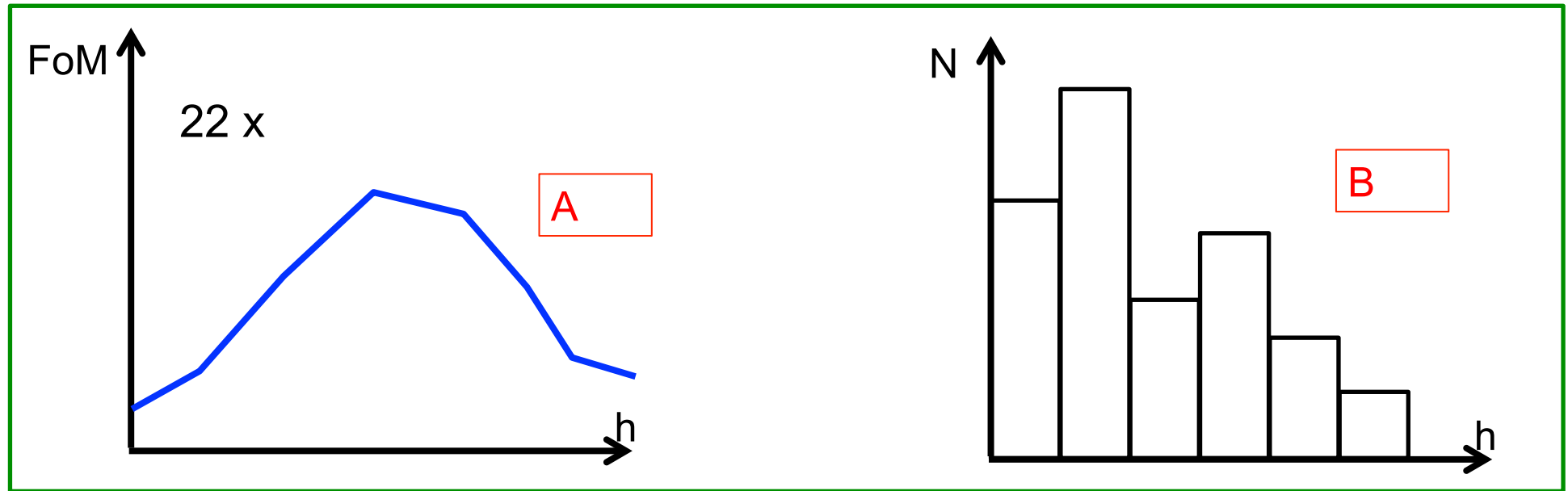
- This is a working meeting
 - time is limited: end by 17:00
 - some flexibility needed to address issues
- Agenda:
 - 13:00 Ken Andersen: Welcome
 - 13:20 Alan Takibayev: Flat moderators and beyond: current status of neutronics work
 - 13:40 Konstantin Batkov: Through-going beam tube and lead reflector
 - 14:00 moderator discussion
 - 14:20 instrument clip session
 - 15:00 coffee break
 - 15:30 Ken Andersen: overview of instrument optimization work
 - 16:00 instrument discussion and future work
 - 16:50 Ken Andersen: wrap-up
 - 17:00 end



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Pancake Moderator Meeting 2014-02-12

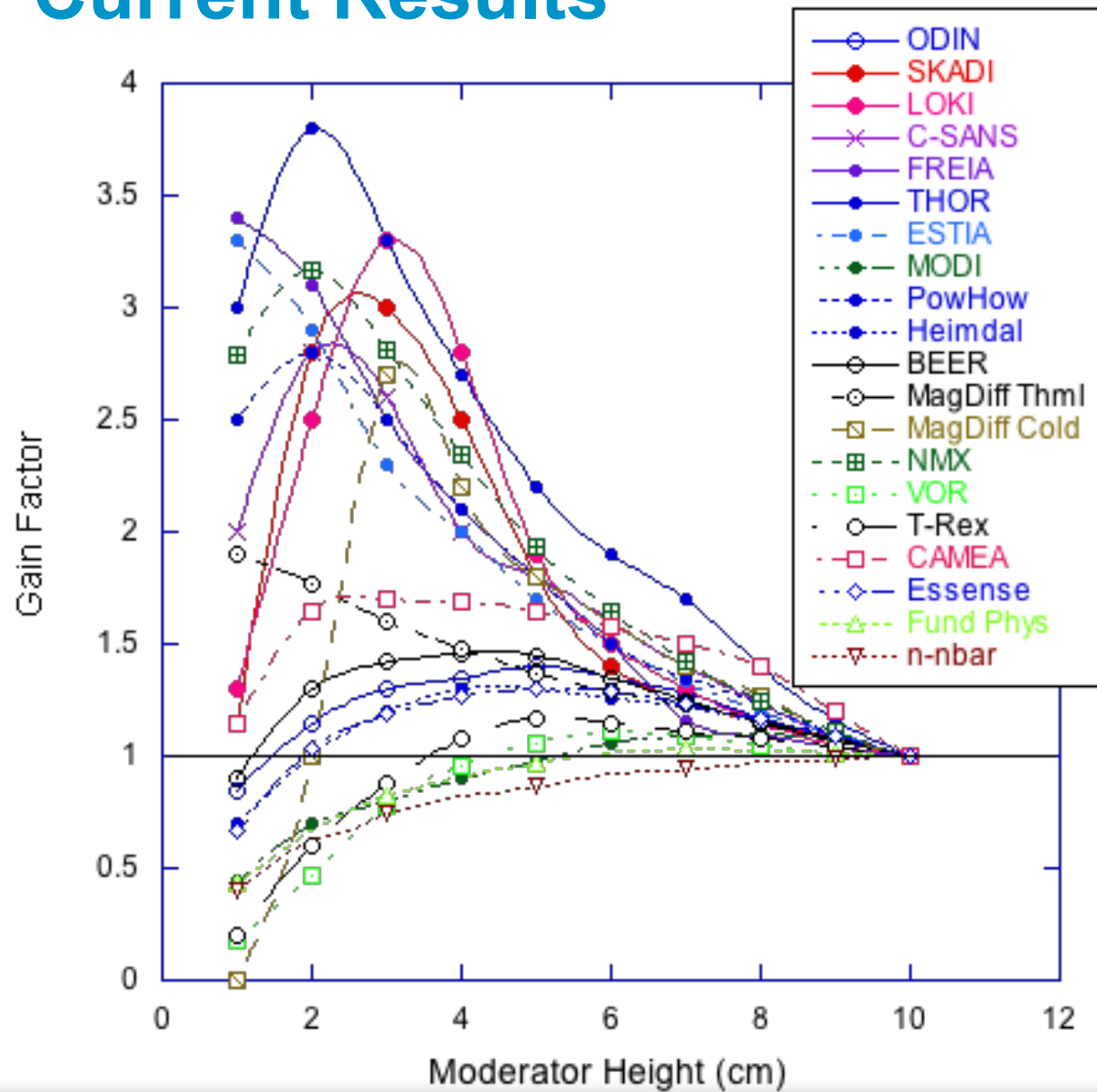
Plan of action for instrument optimization



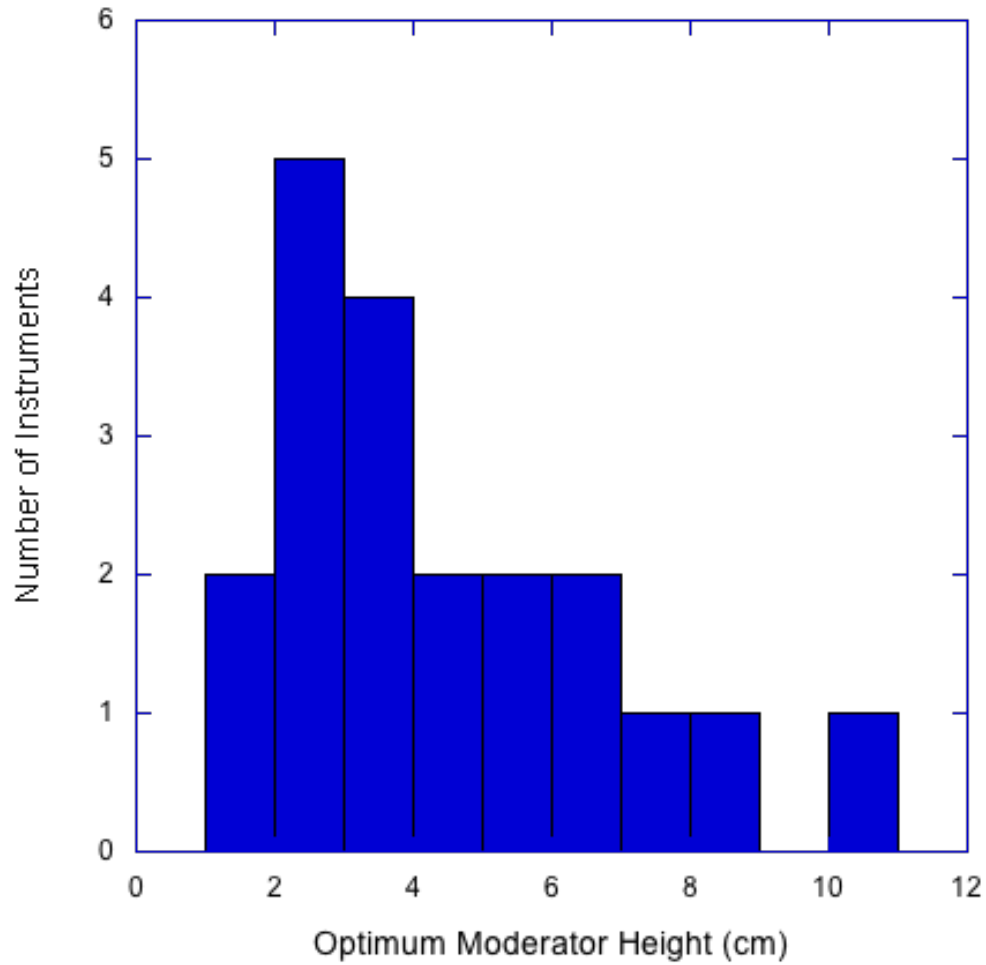
- Instrument results by 28th of January
 - update reference suite
- Big coordination meeting 12th of February
 - agree on remaining work
- Freeze moderator design by end-April
 - arrive at global optimum for all instruments
 - arrive at new reference suite layout

Current Results

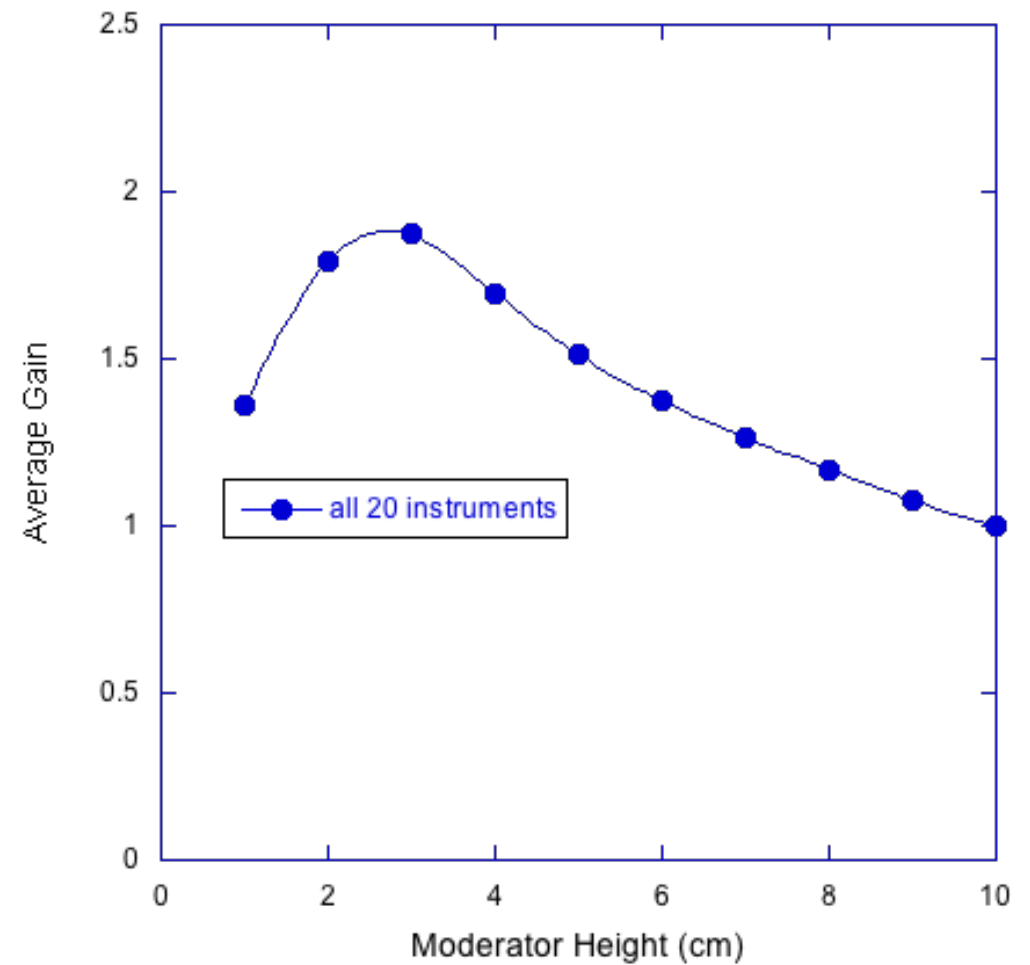
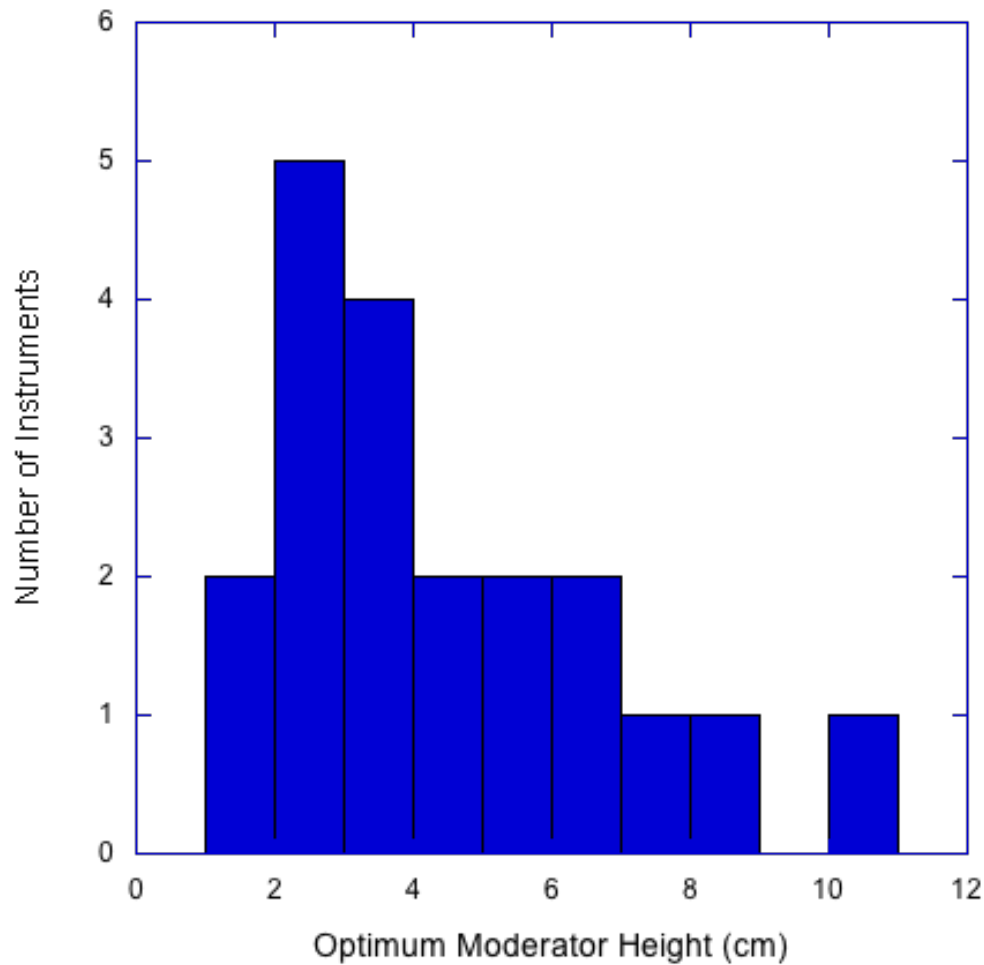
20 instruments so far:



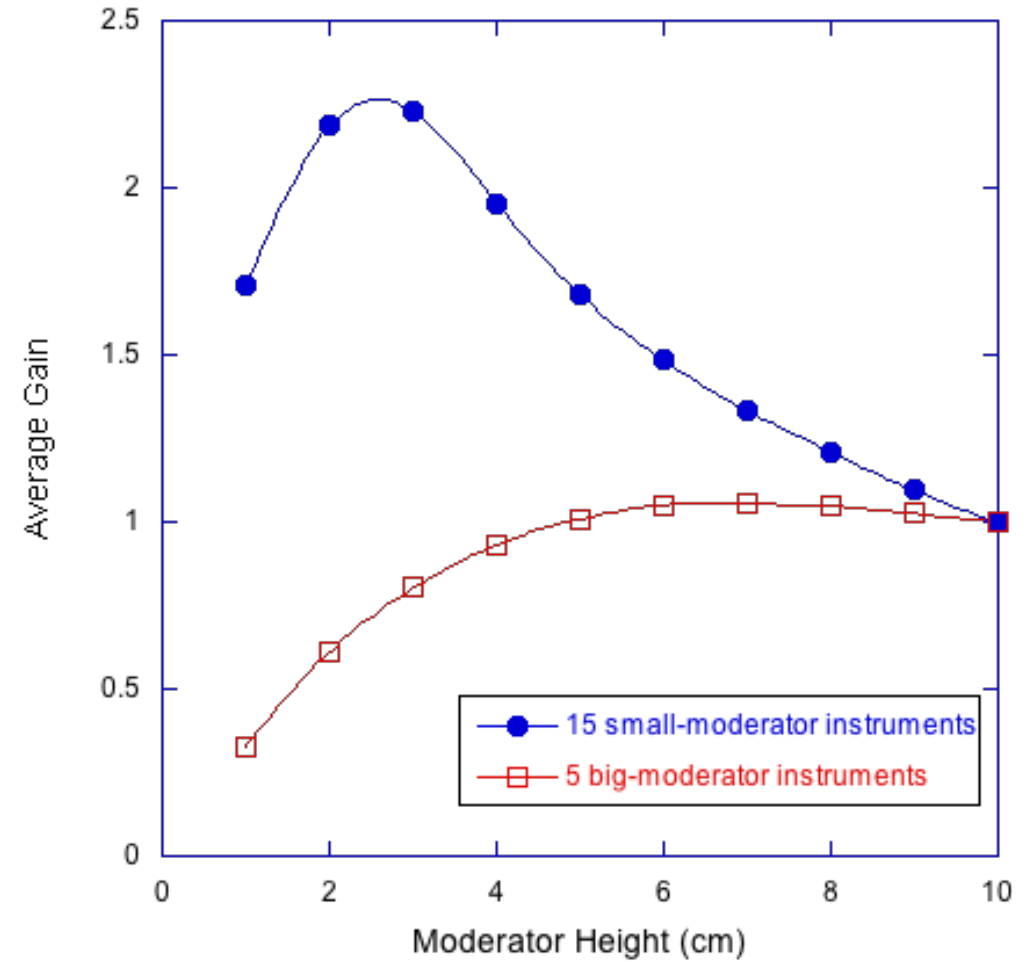
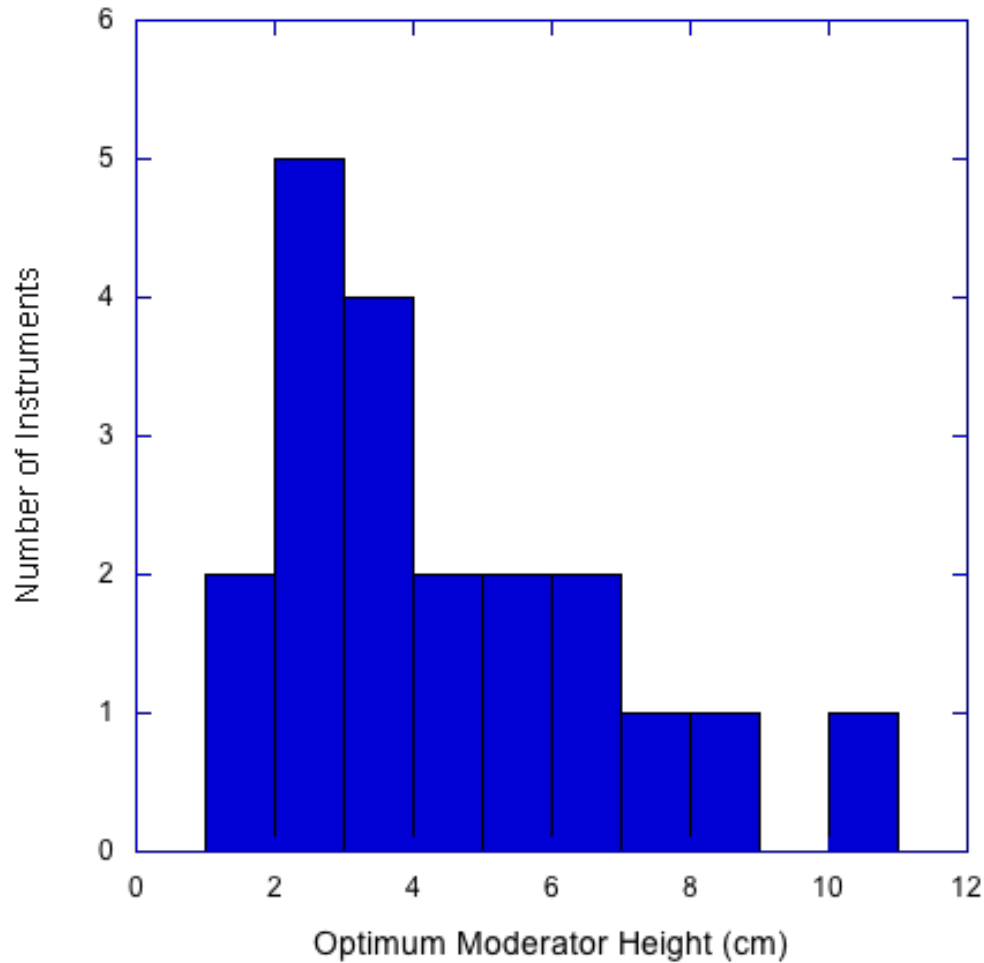
Current Results



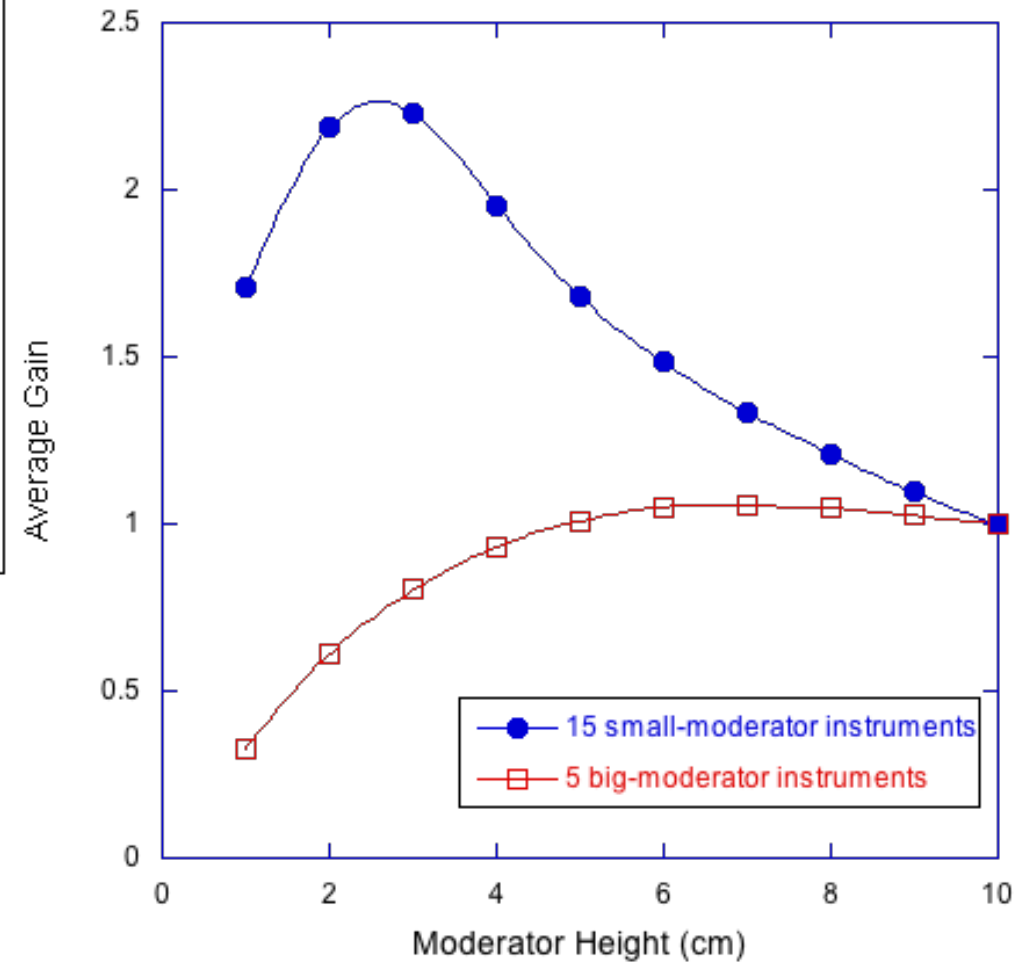
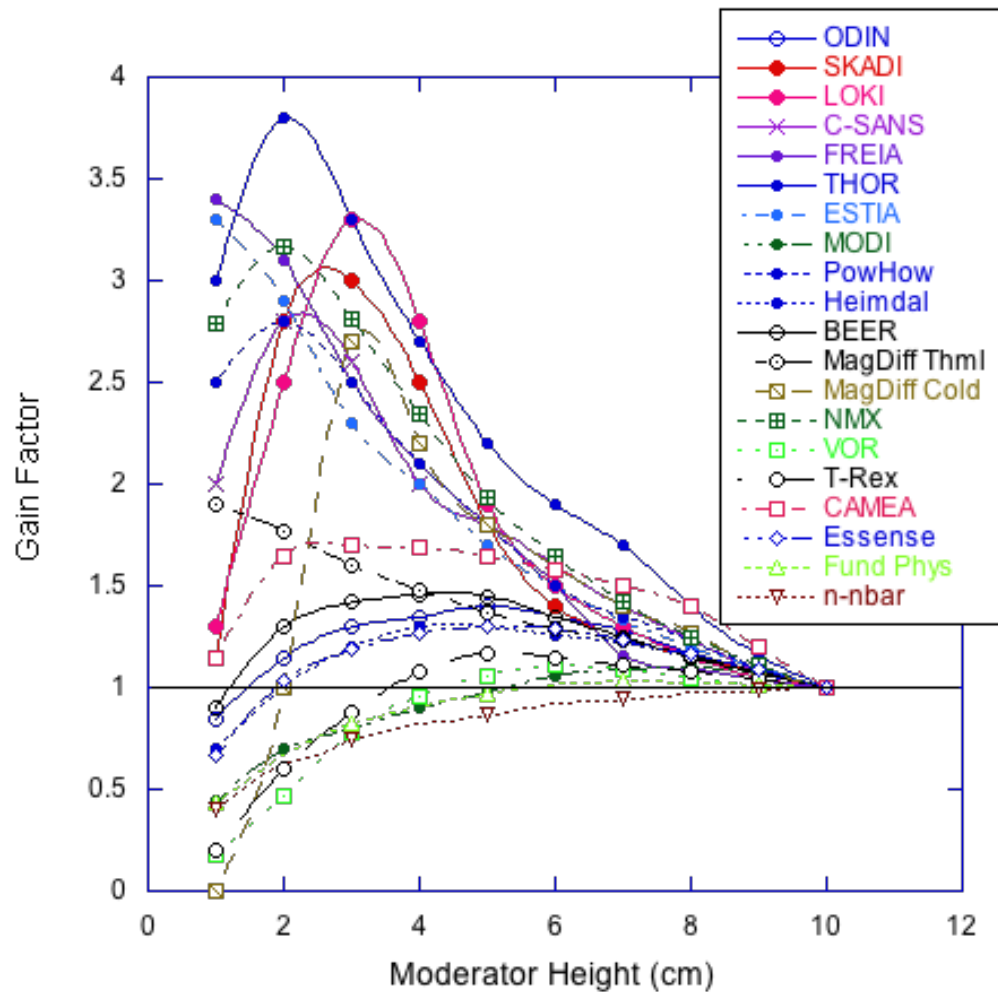
Current Results



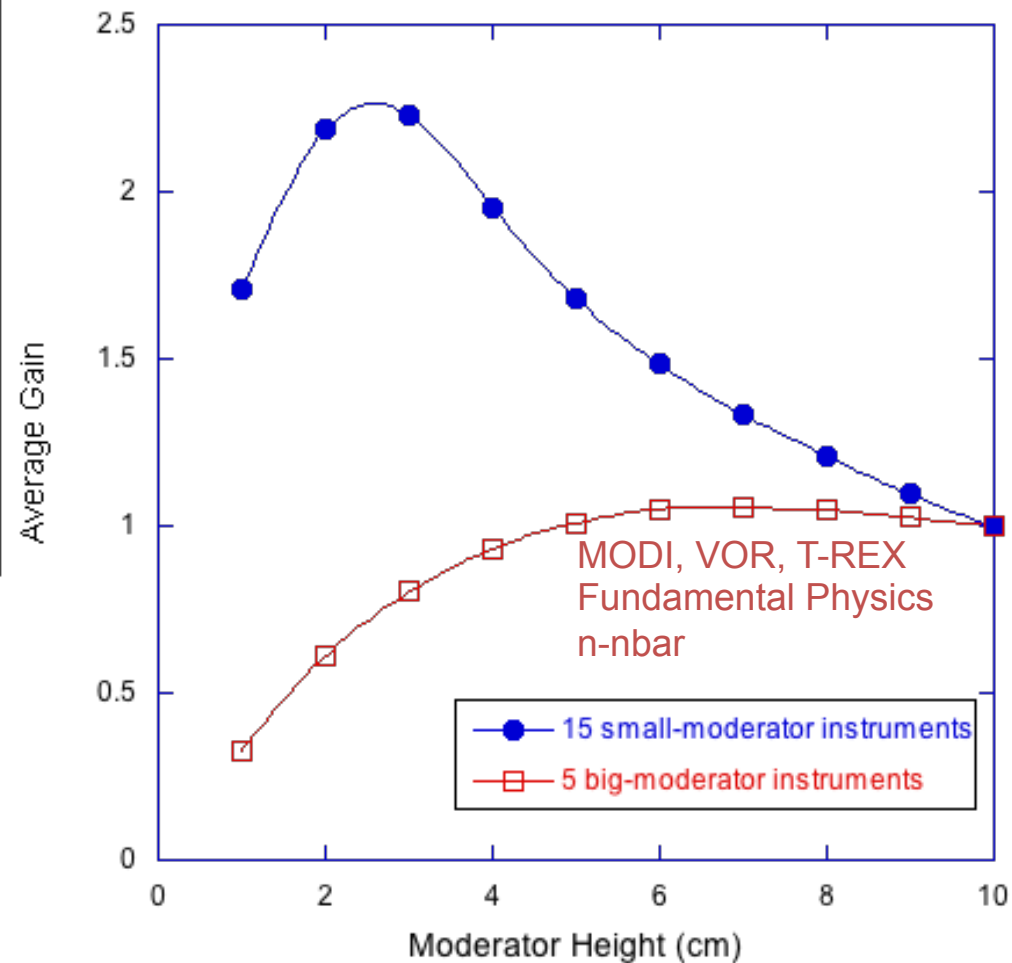
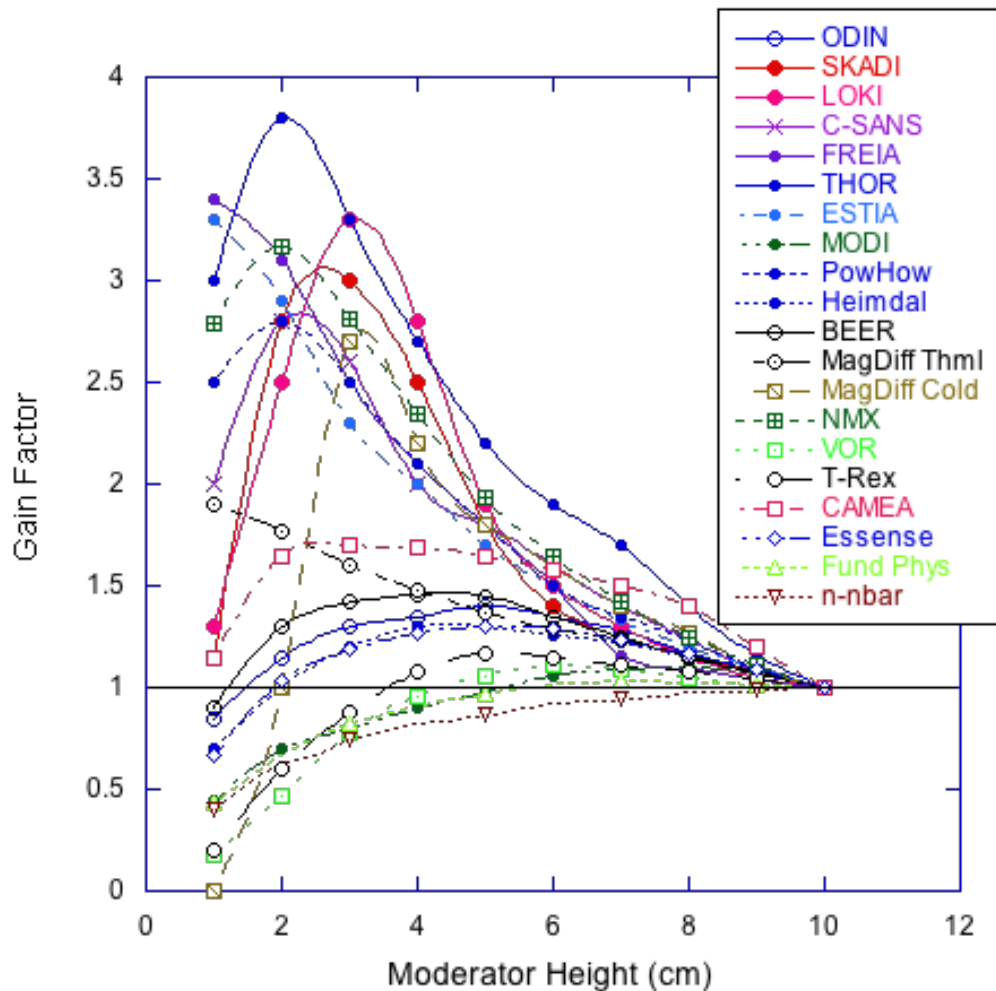
Current Results



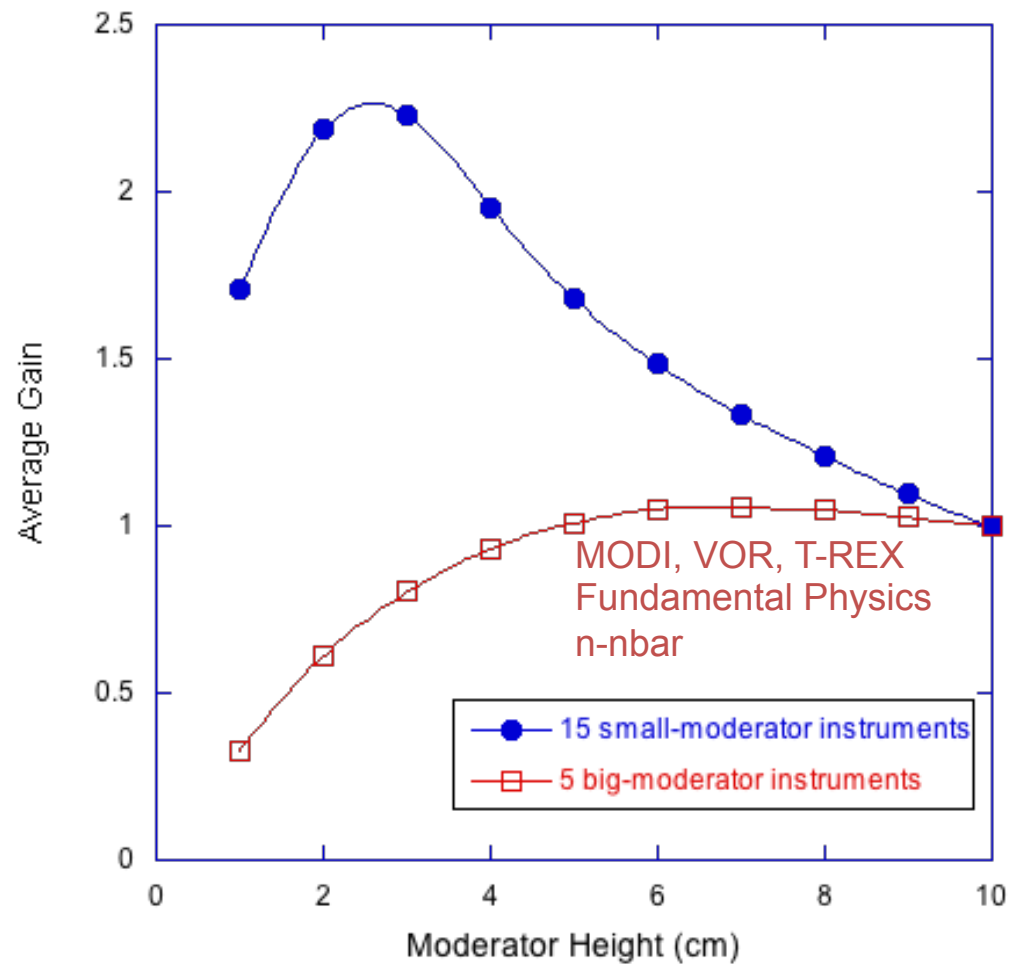
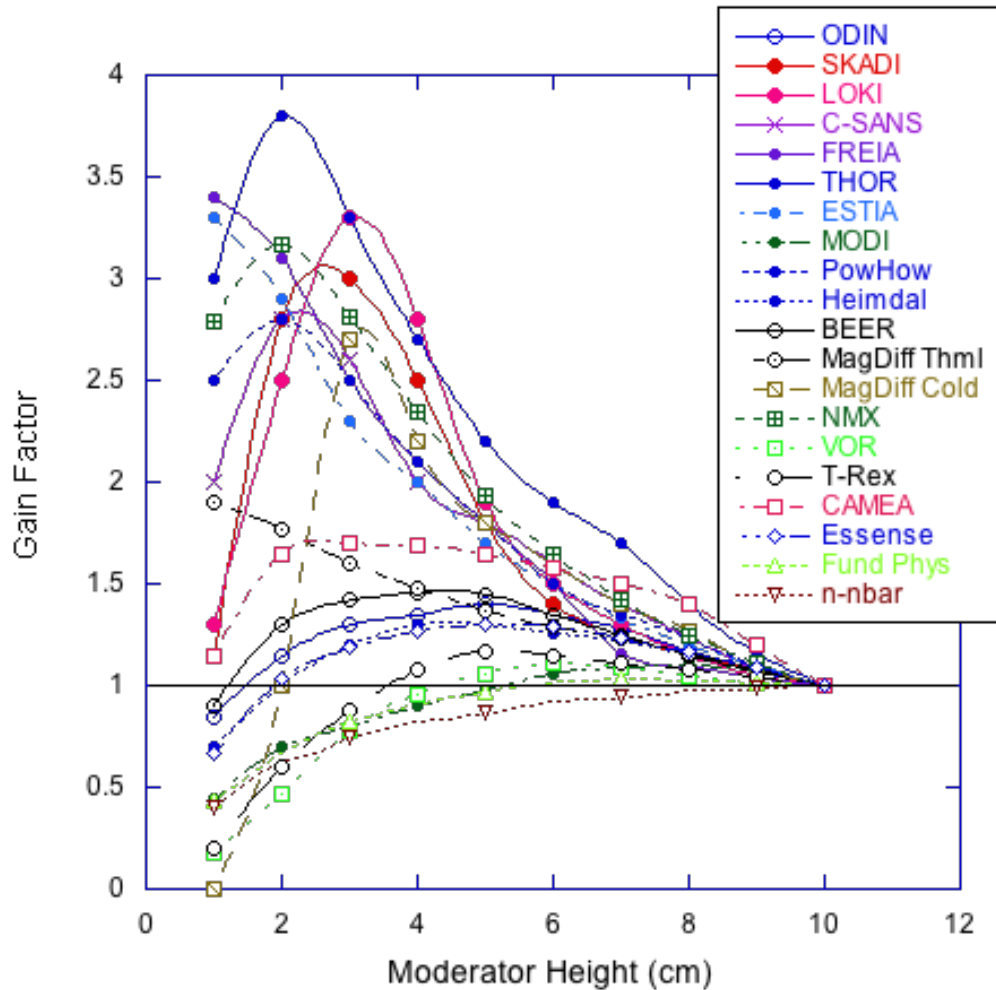
Current Results



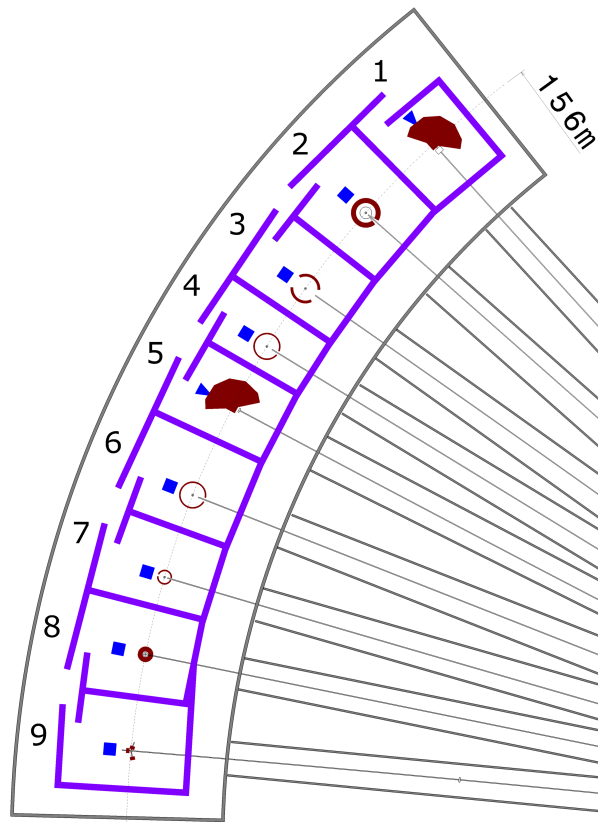
Current Results



Instruments missing from analysis so far:
 Thermal Chopper Spectrometer
 Miracles Backscattering Spectrometer
 Wide-Angle Spin-Echo



Optimising Reference Suite layout: - constrained by building layout

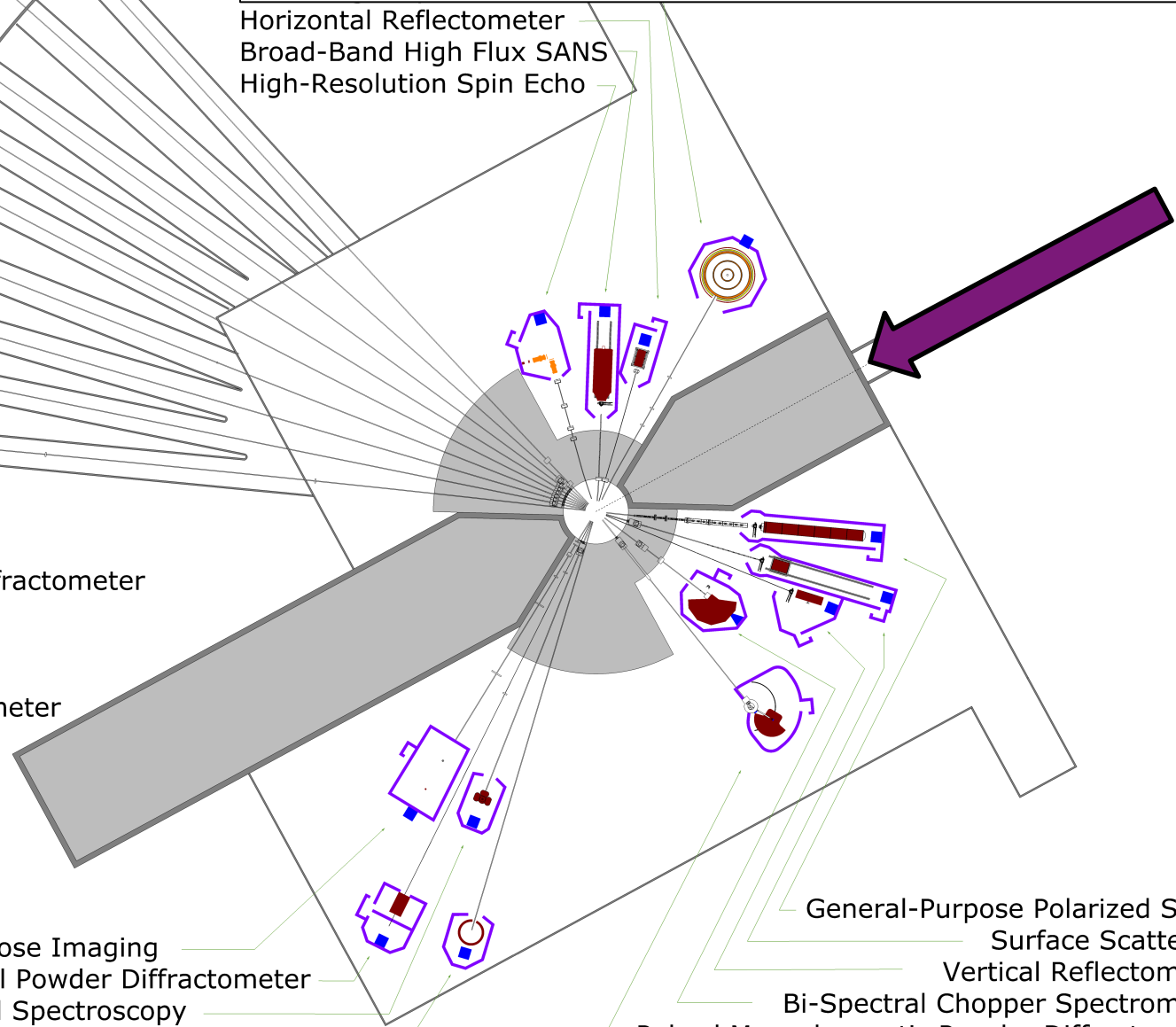


Horizontal Reflectometer
Broad-Band High Flux SANS
High-Resolution Spin Echo

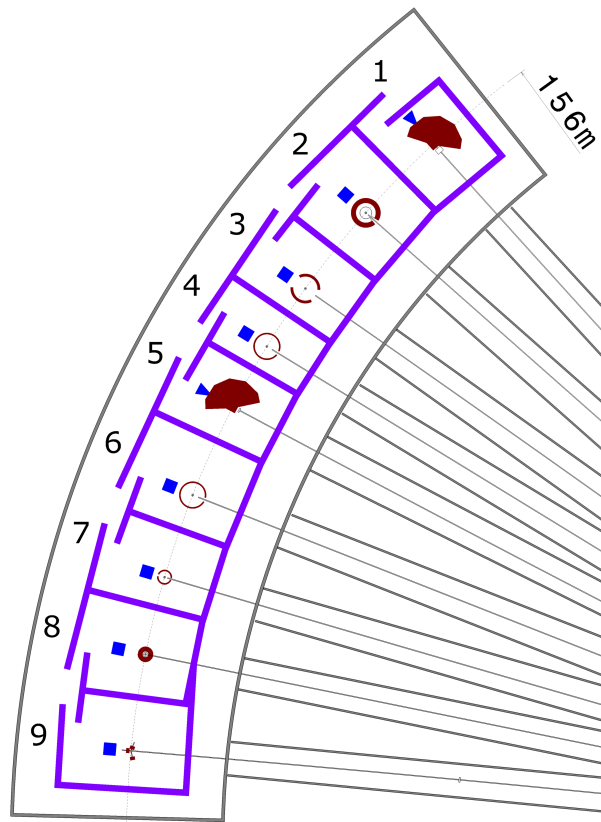
1. Cold Chopper Spectrometer
2. Backscattering Spectrometer
3. Materials Science & Engineering Diffractometer
4. Thermal Powder Diffractometer
5. Thermal Chopper Spectrometer
6. Extreme Conditions Instrument
7. Single-Crystal Magnetism Diffractometer
8. Cold Crystal-Analyzer Spectrometer
9. Macromolecular Diffractometer

Multi-Purpose Imaging
Bi-Spectral Powder Diffractometer
Vibrational Spectroscopy
Fundamental & Particle Physics

General-Purpose Polarized SANS
Surface Scattering
Vertical Reflectometer
Bi-Spectral Chopper Spectrometer
Pulsed Monochromatic Powder Diffractometer



Baseline layout



Wide-Angle Spin Echo
Horizontal Reflectometer
Broad-Band High Flux SANS
High-Resolution Spin Echo

12cm height
12cm height

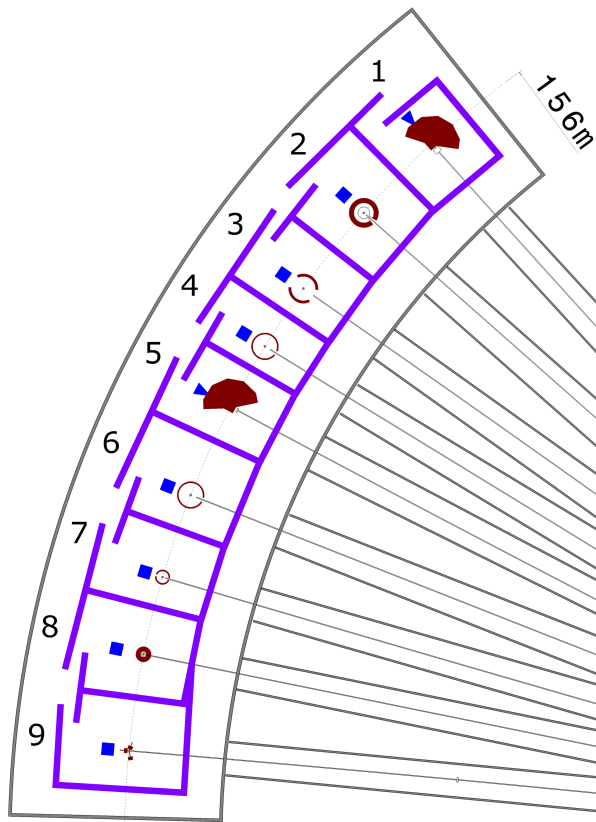
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Possible layout with 1 moderator



Wide-Angle Spin Echo
 Horizontal Reflectometer
 Broad-Band High Flux SANS
 High-Resolution Spin Echo

3cm height
 3cm height

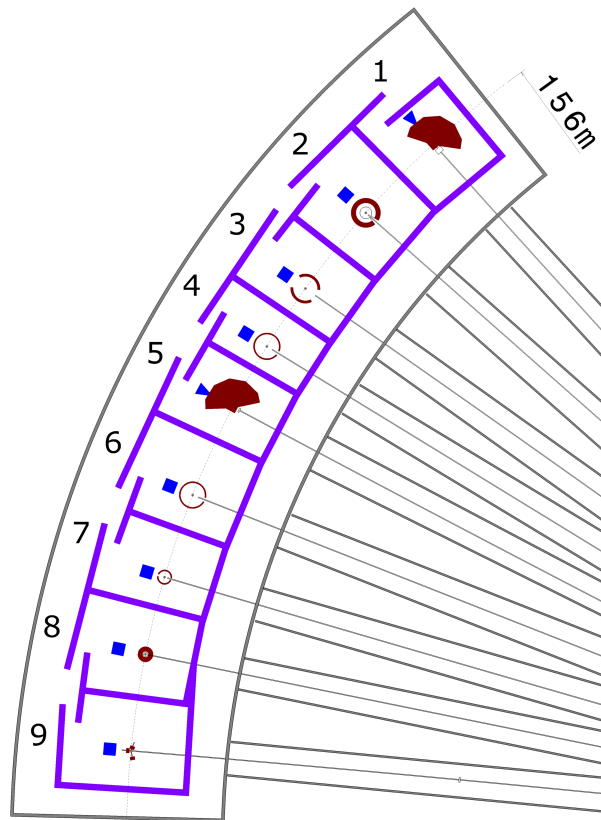
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Possible layout with 1 moderator



Wide-Angle Spin Echo
 Horizontal Reflectometer
 Broad-Band High Flux SANS
 High-Resolution Spin Echo

2cm height
 5cm height

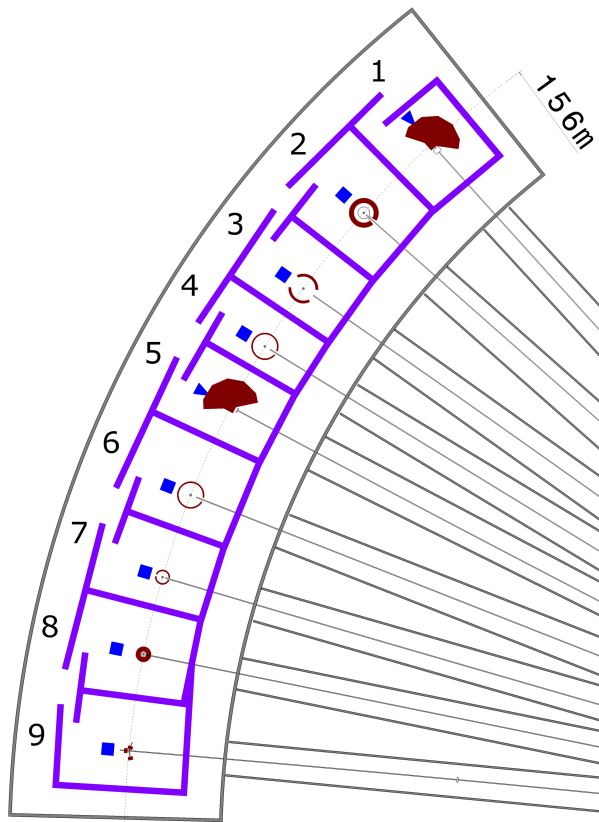
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Possible layout with 2 moderators



Wide-Angle Spin Echo
 Horizontal Reflectometer
 Broad-Band High Flux SANS
 High-Resolution Spin Echo

3cm height
 6cm height

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Suggested Plan of Action

- Check my curves (everybody)
- Check everybody's calculations (Ken, Markus, Phil)
- Improve calculations where needed (everybody)
- Identify critical instruments
 - those apparently not happy with 3cm moderator
- Concentrate effort on critical instruments
- Lay out all instruments within boundary conditions of buildings
 - iterate: find optimal solution(s)
 - evaluate pros and cons of 1 vs 2 moderators

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Agree on who does what, when