

Jan 2024 GPSANS Experiment Working Group Update

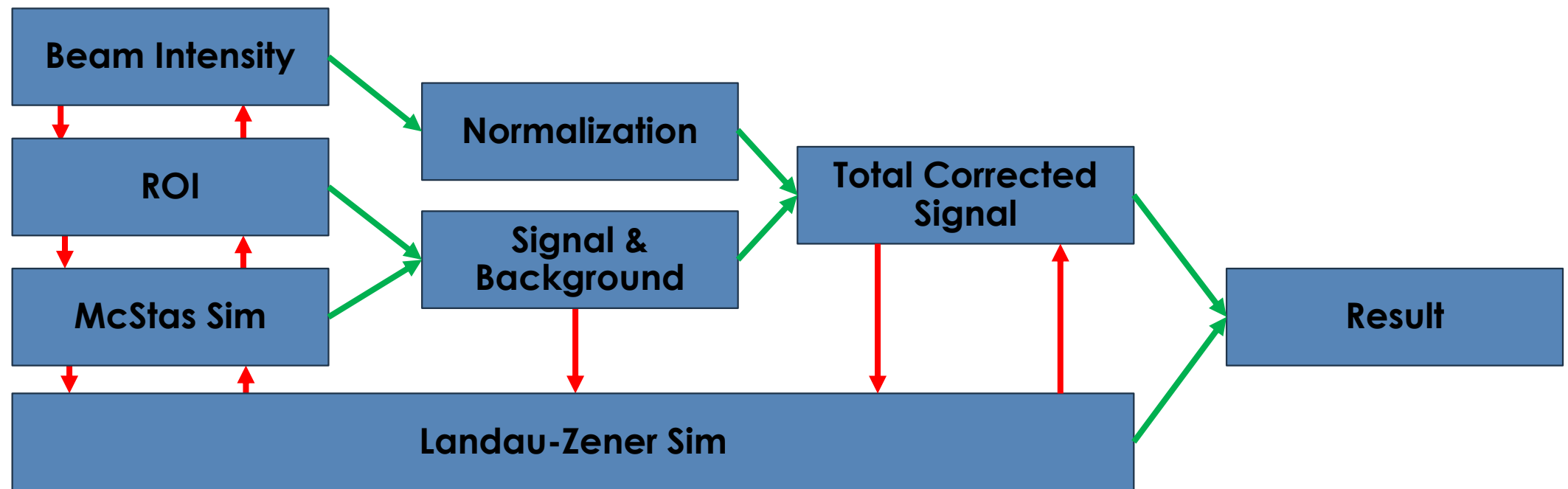
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May 2, 2024

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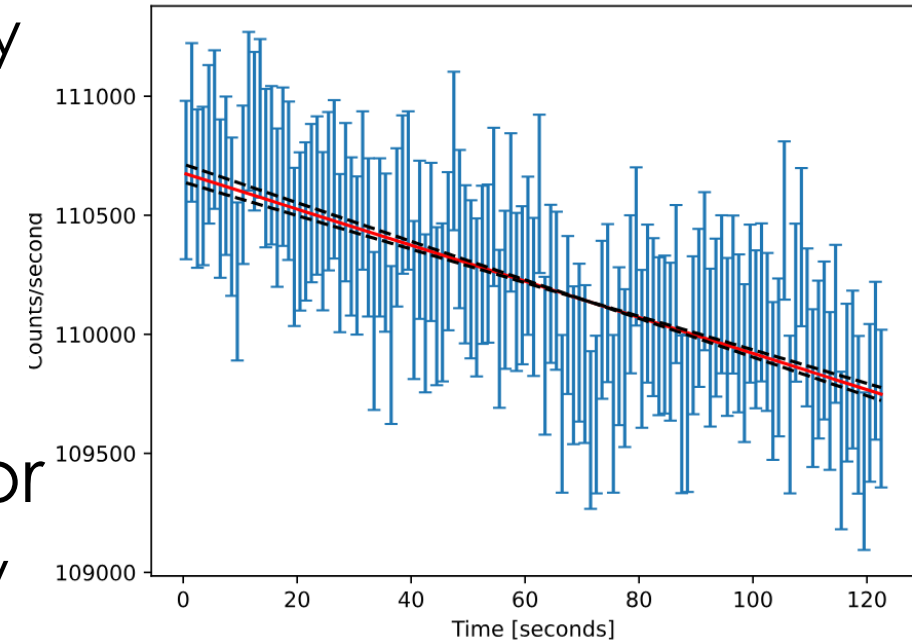
Data Analysis Working Groups Structure/Plan

- Each Working Group Meets Every Other Week
 - Beam Intensity
 - Detector ROI
 - McStas Simulation
 - Landau-Zener Simulation
 - Normalization
 - Signal & Background
 - Total Corrected Signal
 - Result



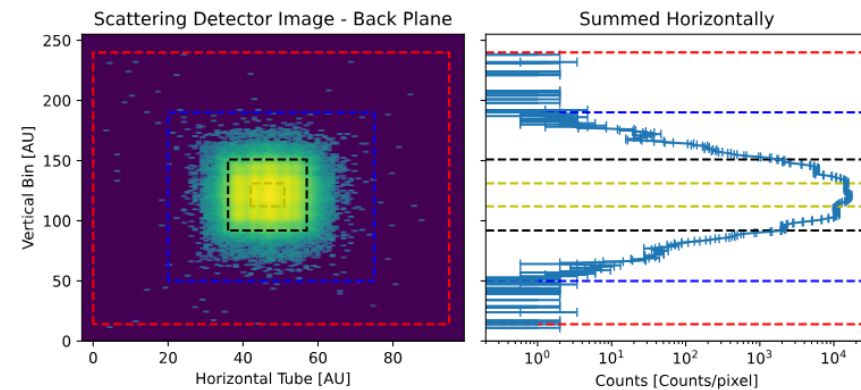
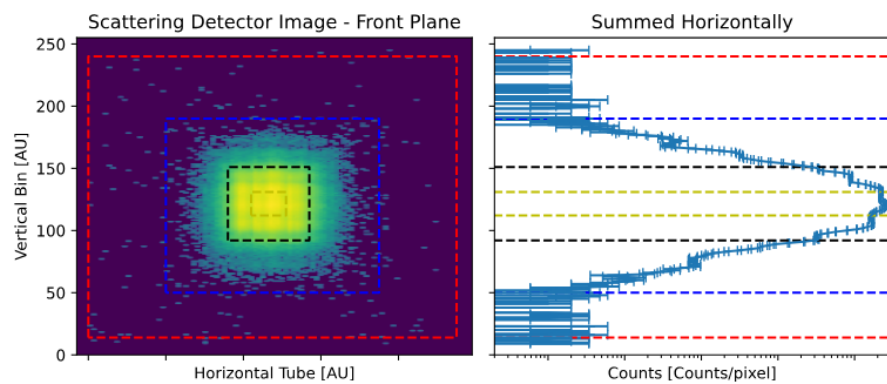
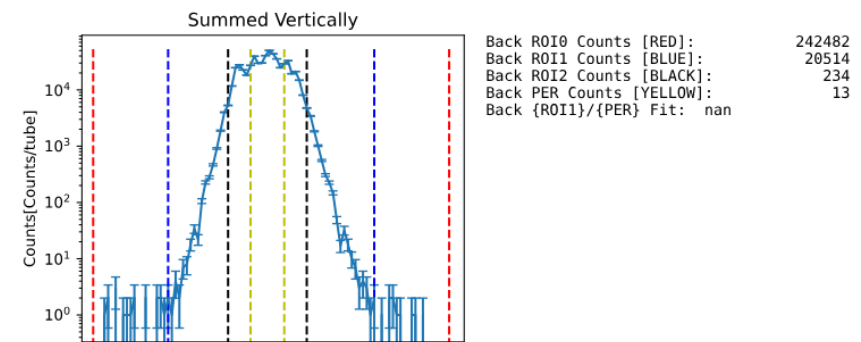
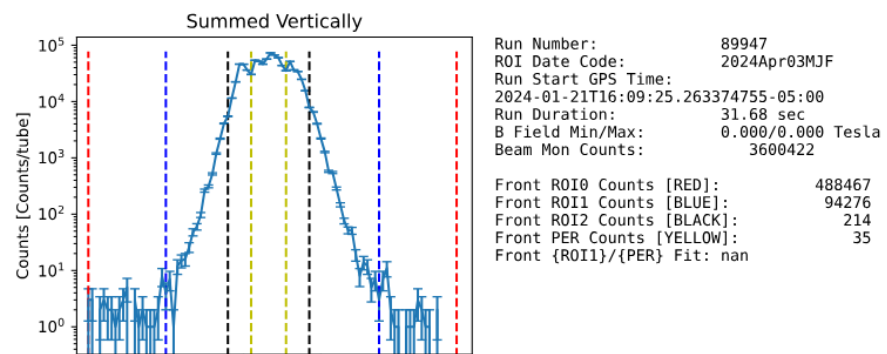
Beam Intensity Working Group Activities

- **Mission: Determine Beam Intensity and Spectrum for Each Run**
- Low Efficiency Monitor Data
 - Plot of each run second-by-second intensity with trend
 - Minute-by-Minute to be aggregated for comparison to other instruments
 - Questions about true efficiency
- Attenuated Beam in Scattering Detector
 - PHITS Simulations have started, not a priority



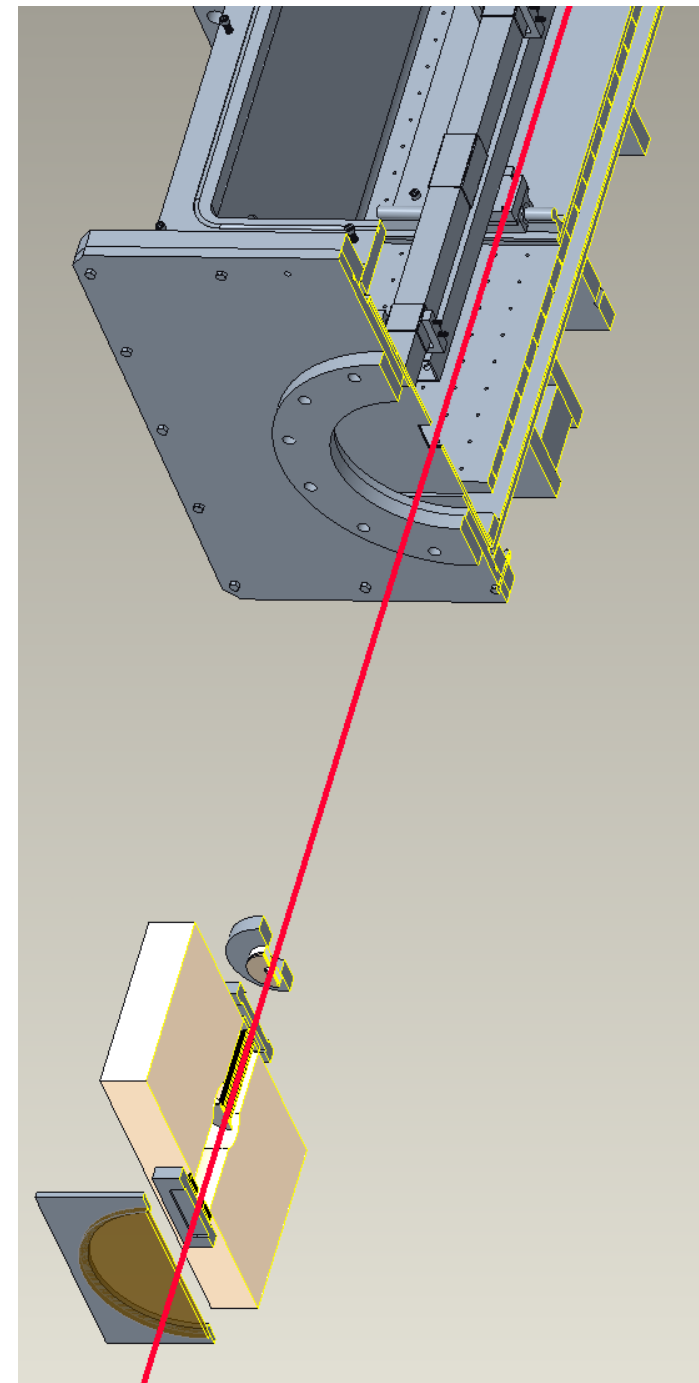
Detector ROI Working Group Activities

- **Mission: Determine ROI Masks for All Data**
- Determine ROI of Attenuated Beam Footprint
 - Optimization still ongoing, but almost ready.



McStas Working Group Activities

- **Mission: Refine McStas Simulation to Match Experiment Config**
- Repository Access is setup and available
- Measure and Document Precise Locations of Components – CAD for Virtual Measurements
 - BN Apertures, B4C Tube, Cd Plate, Si/Sapphire Window Geometries
- Discovered a Potential Vertical Offset ~1mm
 - Could Impact Intensity, beam phase space through B field should be quantified and understood using McStas
- Impact of Si/Sapphire on Experiment



LZ Simulation Working Group Activities

- ***Mission: Provide Limits Based on Experiment Setup and Results***
- Understanding result in the 20-40 Angstrom spectrum range
 - ~5% based on current understanding of spectrum shape.
- GT Hackathon for LZ code port to enable
 - Translation to Python, Transportability, Scalability
- Long term Goals
 - Separate Publication in Open-Source Coding Journal
 - Suitable Documentation for use by all interested Scientists
 - Apply for Jan 2024 GPSANS result

Data Analysis Working Groups Progress

