

LAr R&D Progress Updates

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Lab Safety and Space Management

▶ EEI Inspector training complete

- Last EEI JPM conducted at NSLS-II on a AC to DC power supply on one beamline station
- Finished the EEI inspection record training with Steve in charge of EAHJ (Electrical Authority Having Jurisdiction)
- EEI inspector approval paperwork in progress, will be able to conduct EEI inspection once in the system
- I will be the third EEI inspector in Physics Department

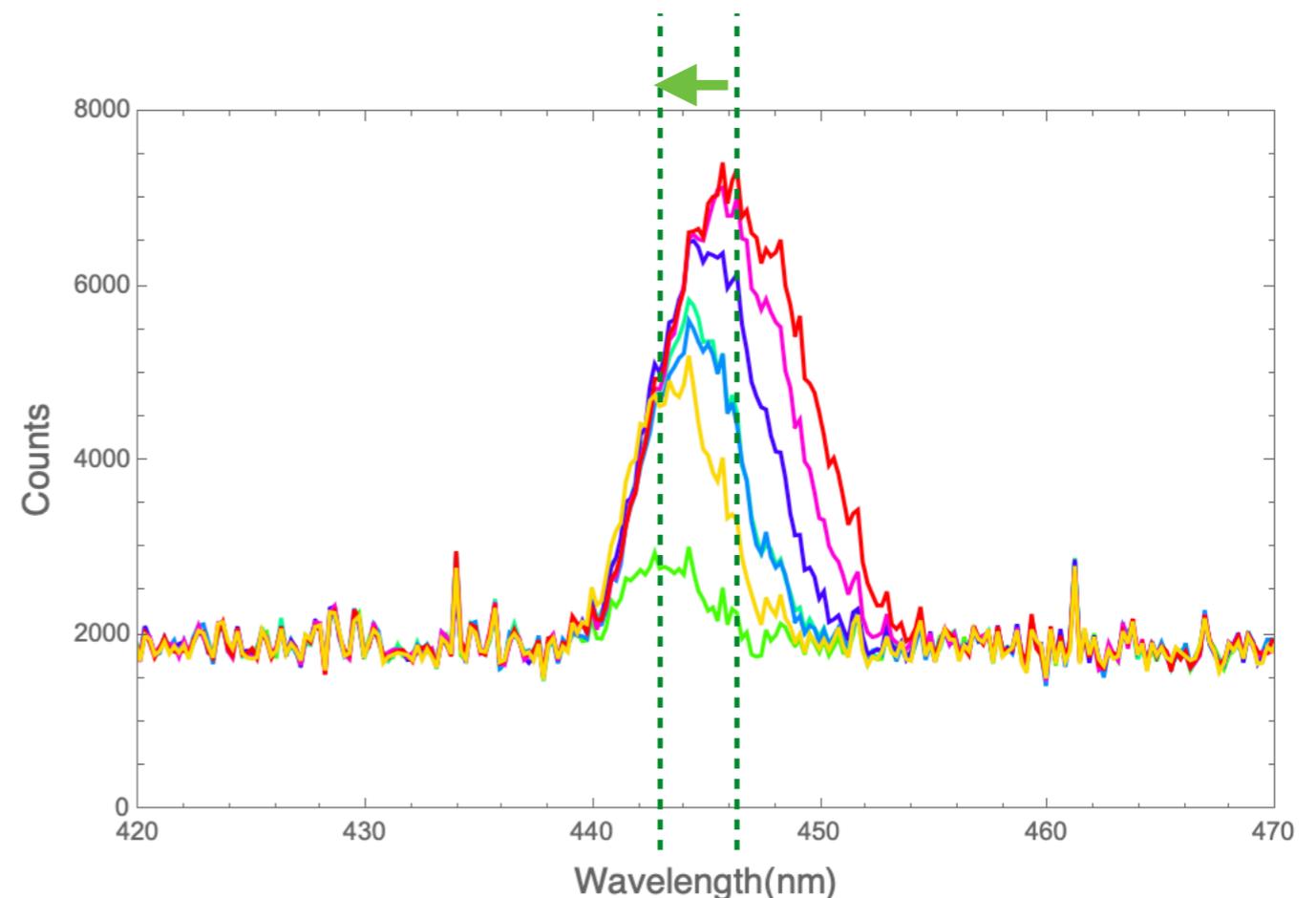
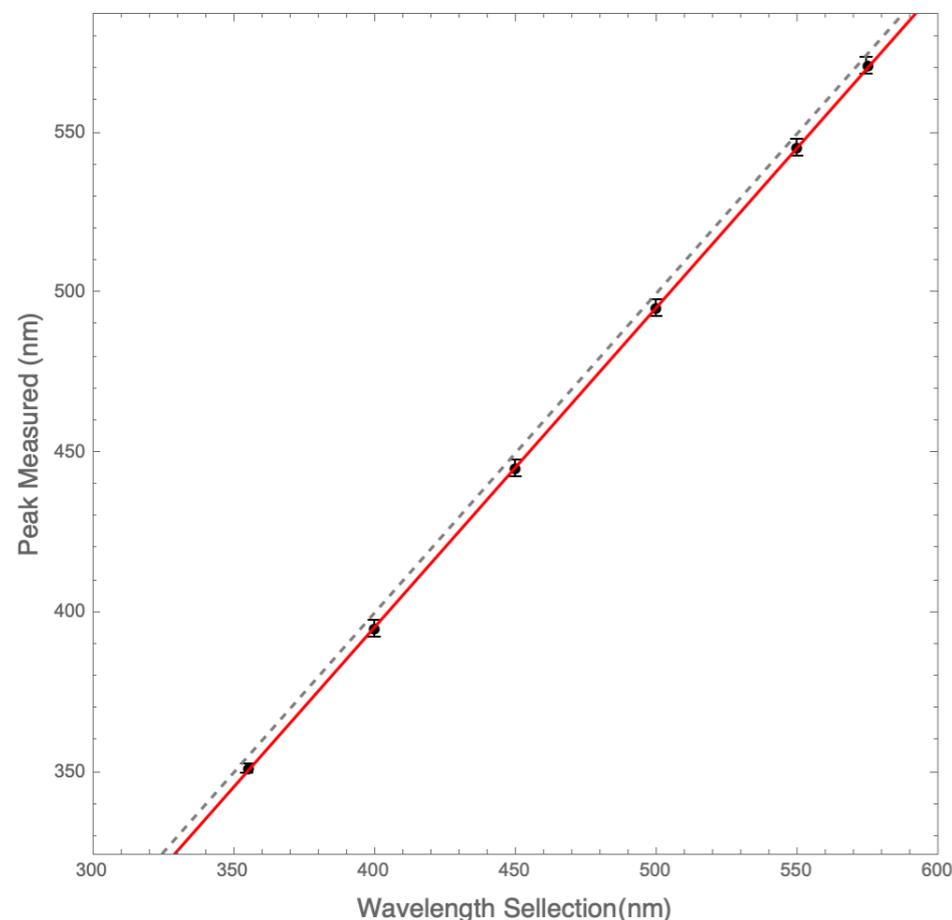


Spectrometer Consultation with McPherson

► Consulted with McPherson tech support about our observation

- The major problems:

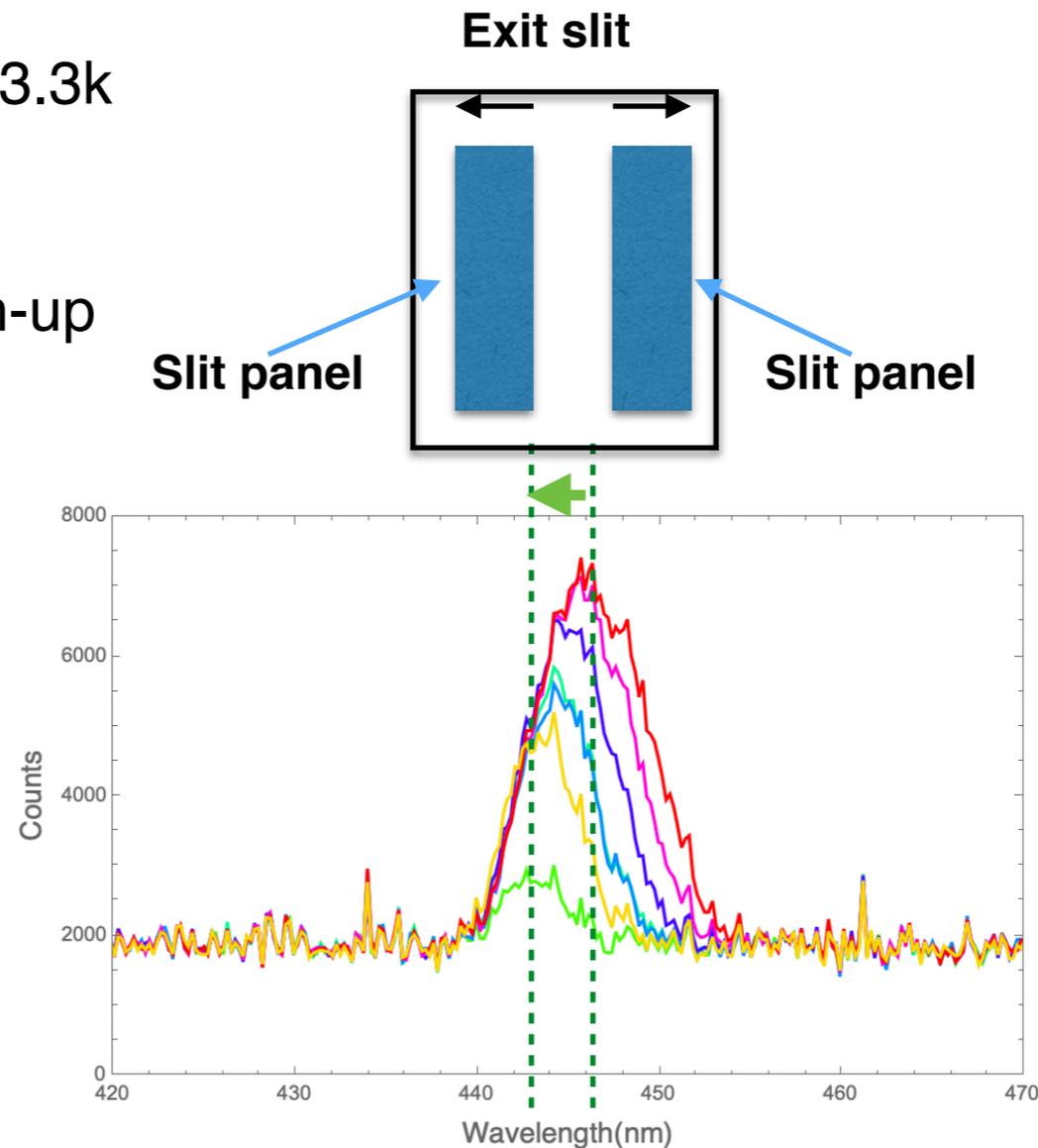
- A constant offset of $\sim 5\text{nm}$ was observed for each wavelength setting
- The peak position slightly shifted with the exit slit aperture opening, while it supposes to only change the peak width



Spectrometer Consultation with McPherson

► Explanation from McPherson

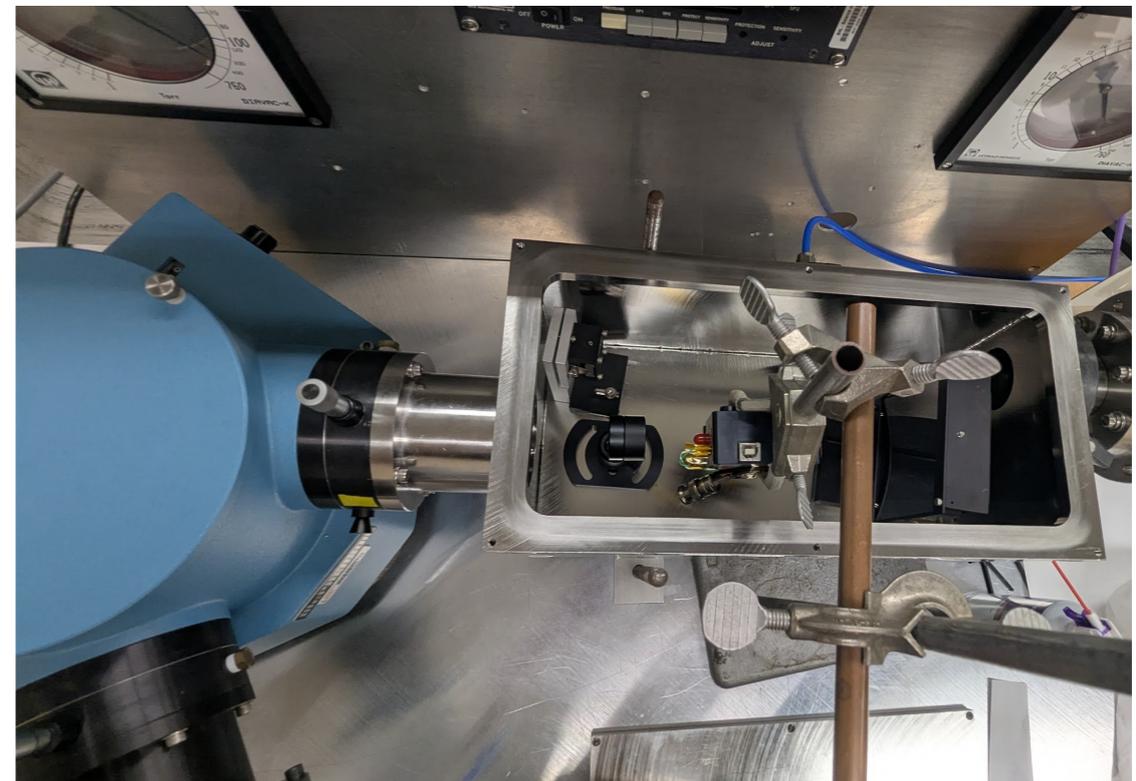
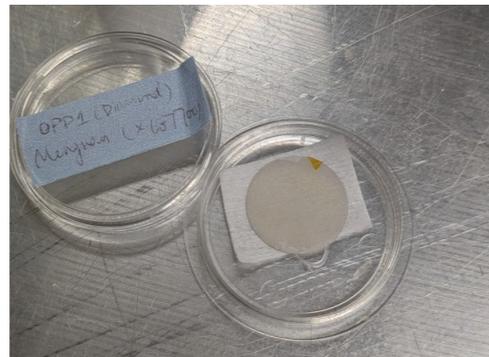
- The exit slit has two panels on both size that should move simultaneously
- The symptoms we observed show on side of of the panel may be stacked, only panel on one side is moving
- The cause is the grease on the mechanics dries out with time
- The also suggested a clean up and re-lubrication on the slit mechanism
- The replacement cost is about 3.3k
- May also fix the peak offset
- Asking Bill to conduct the clean-up



Spectrometer Application

▶ Diamond wafer emission spectrum measurement

- First use of the spectrometer after refurbishment
- Aleksey provided a 1-inch diamond wafer
- We just got another wavelength measurement device with low limit at 180nm
- Repeating the wavelength selection measurement at VUV range starting from 180 nm
- Use the spectrometer with ~ 200 nm shining on the diamond wafer to measure the emission spectrum
- Conducted a mock up setup with the wafer mounted on optical mount
- Expected to finish the measurement this week



E-field Simulation for FLArE TPC

▸ Electric field simulation for FLArE Tech note

- Import the CAD model of the current FLArE TPC geometry to COMSOL
- Tried to conducted a 3D field calculation, but meshing took over 12 hrs that I aborted the solution
- Instead, cutting through the center along the HV cable to make a 2D cross section
- Field calculation including meshing completes in several minutes
 - Electric potential plotted with color density with cathode biased at 2.0 kV, anode on ground
 - Electric field lines only plotted on one side of a module to demonstrate the uniformity
 - No obvious local sharp point observed.
- Figures added to the FLArE design tech note, expected to finish this week.

