

# PSC All-Hands Meeting

Oct 26<sup>th</sup> 2022

Laurent Chapon  
Associate Laboratory Director for Photon Sciences



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Laurent Chapon: PSC Update, Safety, DEI, Budget, Partnerships, Performance Appraisals

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Shelly Kelly (XSD): Spectroscopy Update

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Jim Kerby: APS-U Update

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Awards & recognitions, new starters

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Q&A

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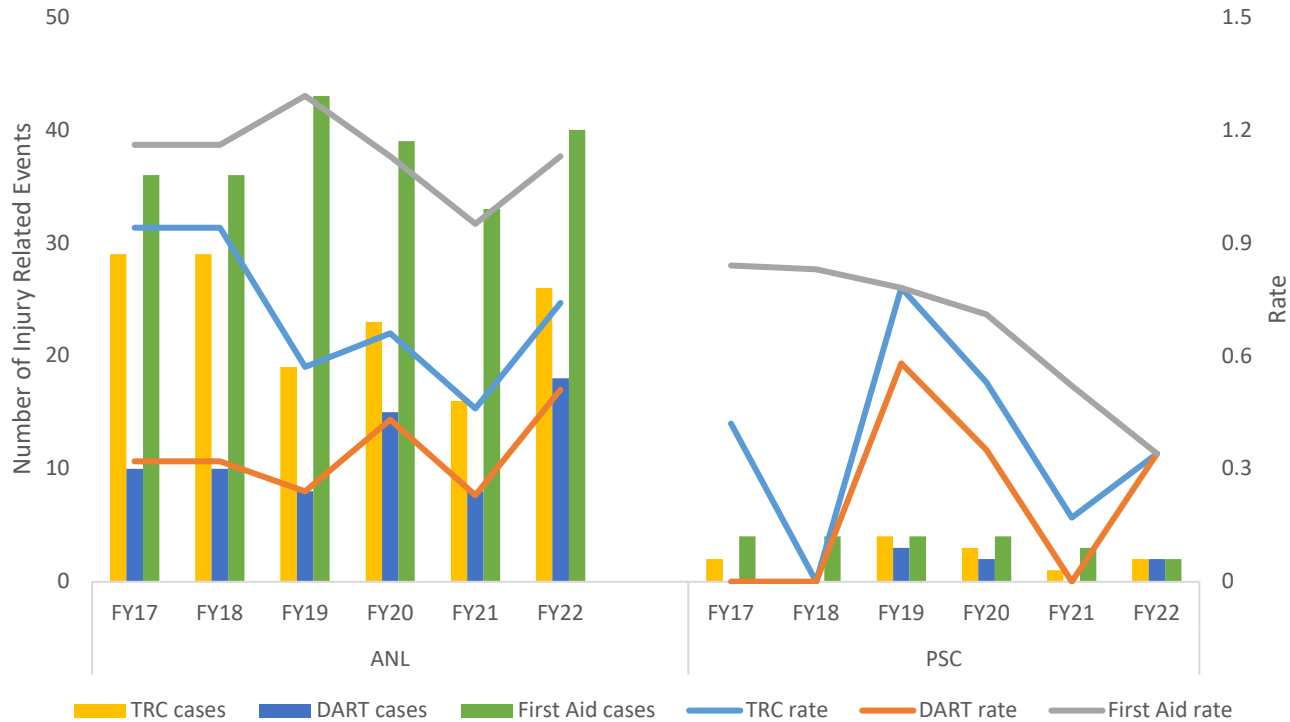
# BENEFITS CHANGES

## Follow-up from Lab All-Hands

- Discussion with representatives of ERGs, staff.
- Thank you for your engagement and constructive feedback.
- Working hard to propose a third option alongside the two PPO plans
- If problems obtaining specific answers email [lchapon@anl.gov](mailto:lchapon@anl.gov)
- Action required by all benefits-eligible employees by November 14, 2022

# SAFETY

## 5-year Injury Events w/COVID



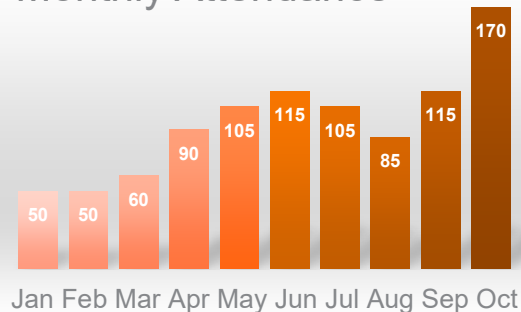
# Diversity, Equity & Inclusion Opportunities



## “The Voice of PSC”:

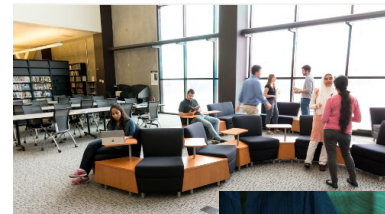
Safe and open forum to share thoughts, ideas and concerns, every 3<sup>rd</sup> Thursday, 1-2PM

## Monthly Attendance



## Argonne's Learning & Organization Development

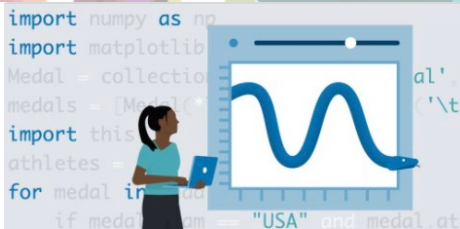
Programs promoting professional & leadership development, and Argonne's culture of DEI



ARGONNE MENTORING PROGRAM

Activate your  LEARNING

**account:** Unlimited access to 5,000+ courses to develop leadership, technology-related, and creative skills



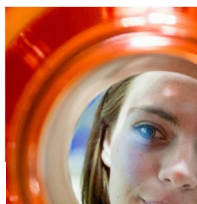
Find all the details on our DEI webpage



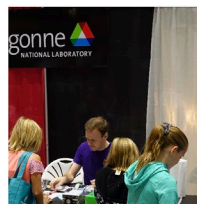
# STEM Outreach Program

## MYARGONNE

MY APPS



Youth Conferences



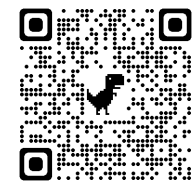
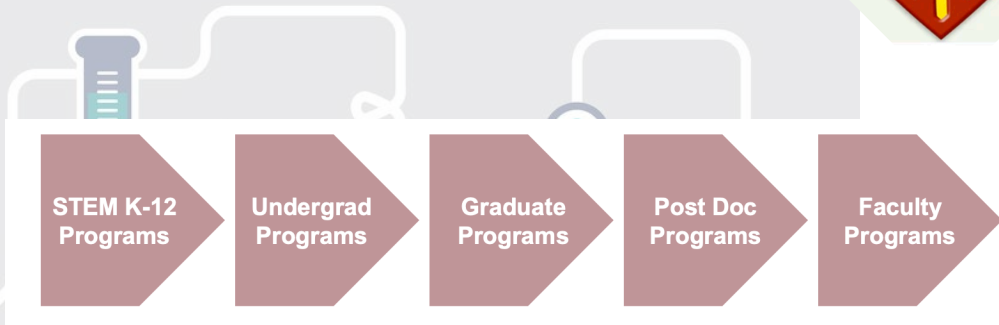
STEM Fests



Argonne in the Classroom



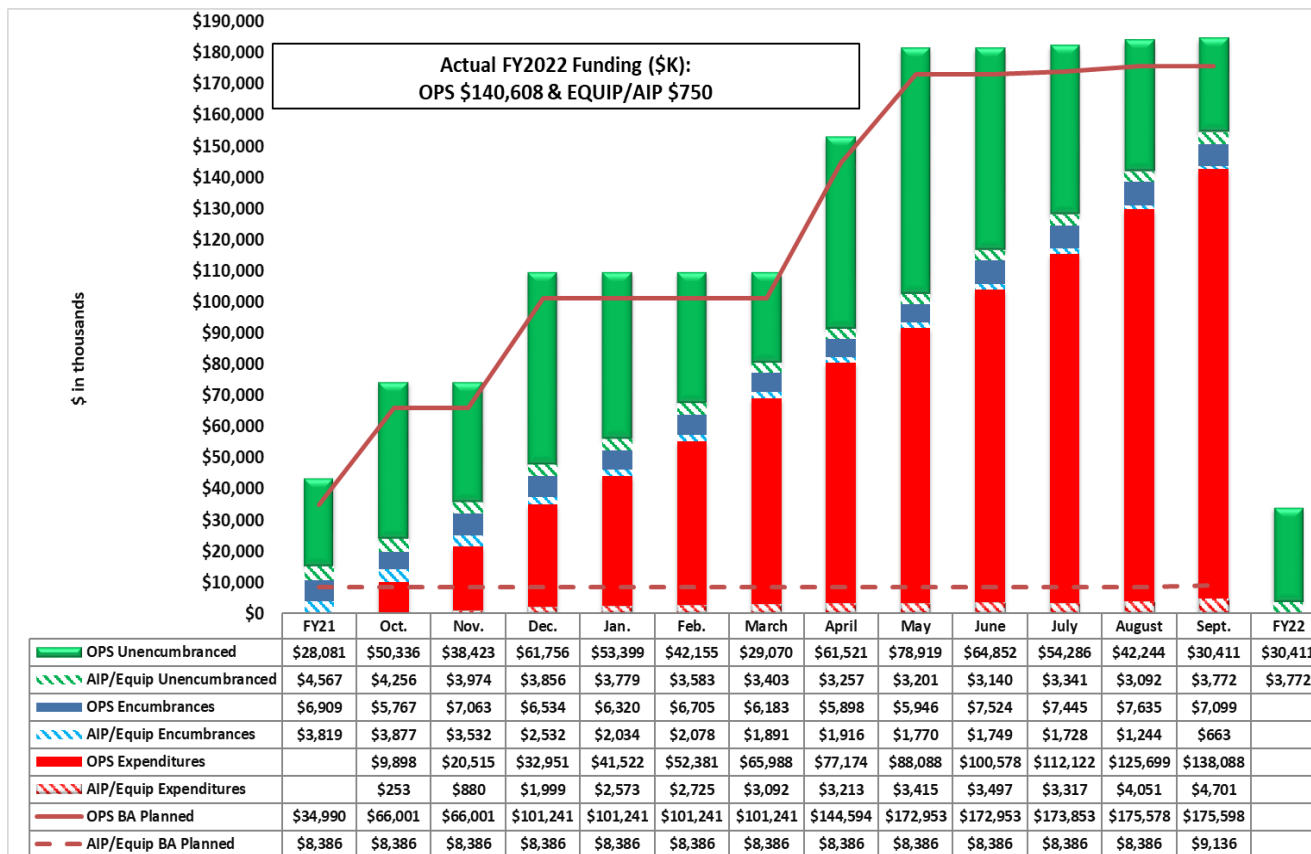
Volunteer Management System (VMS)  
Mobile



# PSC FY22

	Carryover	FY22 Funding	FY22 Spending	Obligation	Unencumbered Balance
APS Operations	\$43,376.0	\$141,358.0	\$142,789.5	\$7,762.0	\$34,182.6
APS Upgrade	\$259,906.6	\$106,000.0	\$122,997.1	\$68,030.5	\$174,879.0
Other DOE	\$22,890.9	\$19,197.8	\$17,559.2	\$2,027.9	\$22,501.6
Strategic Partnership Projects	\$12,496.7	\$9,514.2	\$11,127.5	\$2,096.2	\$8,787.2
LDRD	\$2.3	\$3,337.0	\$3,304.4	\$93.1	-\$58.1
	\$338,672.6	\$279,407.0	\$297,777.7	\$80,009.6	\$240,292.3

# APS OPERATIONS – FY22 BUDGET

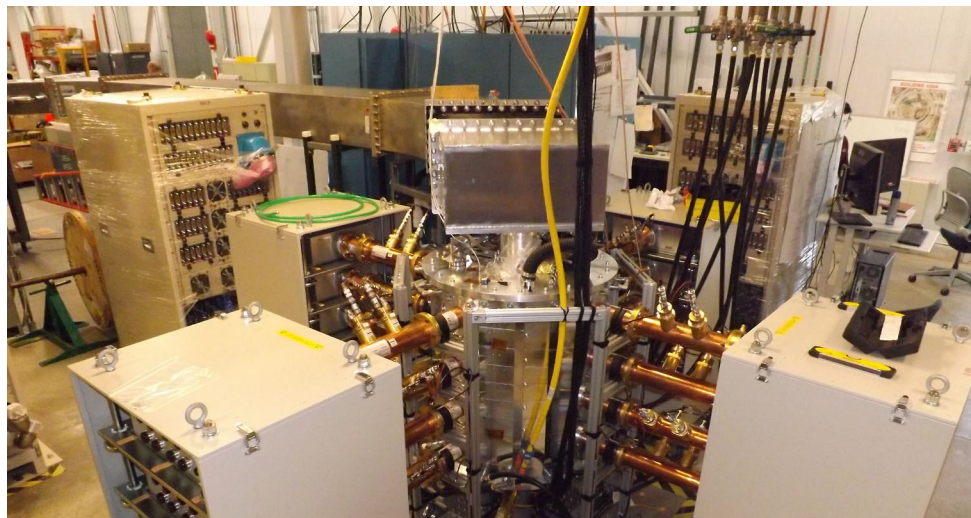




# Replacement of the high-power RF system



**New modulator & Klystron LINAC**  
Addresses obsolescence issues in the APS  
linac to support APS-U operation



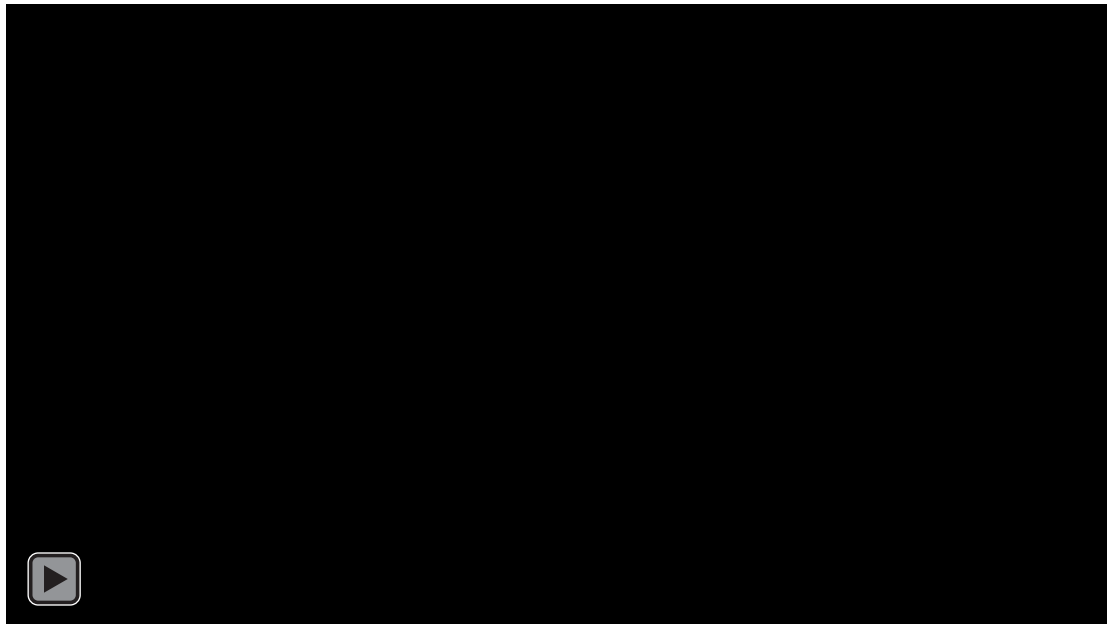
**New 200 kW Solid State Amplifier**  
Prototype will undergo testing in Oct. 2022  
Solid State Amplifier program launch in FY23, will be completed in  
FY27

# Partnership - Microelectronics LYNX

- Non-destructive imaging of integrated circuits and chips.
- Resolving strain and image at the nanoscale (relevant to QIS)
- Probing 3D structure, i.e. complex packaging
- Relevant for metrology and R&D

APS: Jeff Klug, Yi Jiang, Junjing Deng, Steve Henke, Michael Roberts, Stefan Vogt, ...

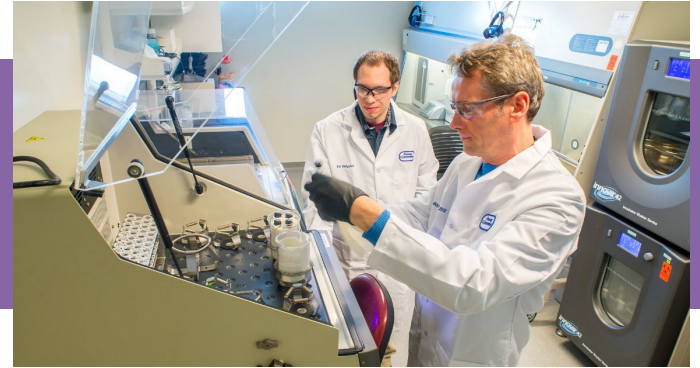
LANL: Nine Weisse-Bernstein, Nick Sirica, Tory Carr, Bill Ward, ...



# Continuing science in MX through the APS dark period

Identification of protein structures in biological molecules is a crucial use of the APS

*21% of the structures in the global Protein Data Bank that were identified using x-ray crystallography came from the APS*



New APS/LS-CAT partnership with Diamond Light Source in the United Kingdom will give users reciprocal access to the two facilities



# Possible Partnership – NNSA (DMSS)

## DMSS: Defense Materials Science Sector

Through a series of dedicated workshops, DOE/NNSA and SC have partners to identify potential investments at U.S. light sources.

**An opportunity for a new sector is in discussion :**

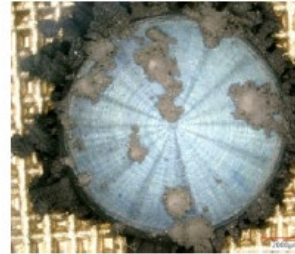
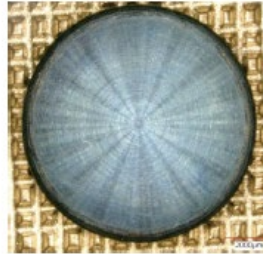
- Long beamline extension with external building
- A Materials Science & Qualification Hutch
- An explosive vessel firing capability
- A pulsed power driver for complex loading
- Other dynamic drivers



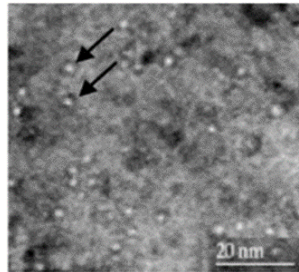
# POSSIBLE PARTNERSHIP – NNSA (DMSS)

The stockpile is changing due to aging, new manufacturing practices, and new materials.

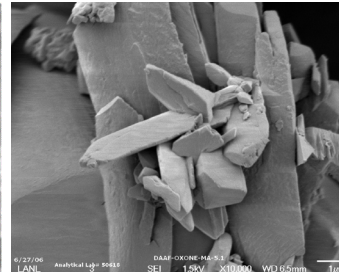
- ANL: **Denny Mills, George Vukovich**, Jonathan Lang, John Quintana, John Almer
- LANL: Dana Dattelbaum, **Brian Jensen, Tom Venhaus**, Reeru Pokharel, Rachel Huber, Don Brown, John Carpenter, Dan Hooks, Brandy Royer
- LLNL: Tom Arsenlis, **Rick Kraus**, Trevor Willey, Mukul Kumar, Nenad Velisavljevic
- SNL: Chris Seagle, Tommy Ao, Sakun Duwal, Chad McCoy
- NNSA: **Allen Dalton**, Sarah Nelson, Kevin D'Amico
- Yogi Gupta, Paulo Rigg, Chris Deeney, Tony Rollett, Rus Hemley
- + *many other principal investigators and university leads*



Surface corrosion



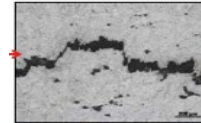
Helium Bubbles  
in Aged Plutonium



High explosives  
Structure-performance



Wrought



AM  
Annealed



Damage in newly  
manufactured steel

# MACHINE ADVISORY COMMITTEE

Chair : M. Minty



# PERFORMANCE APPRAISALS TIMELINE

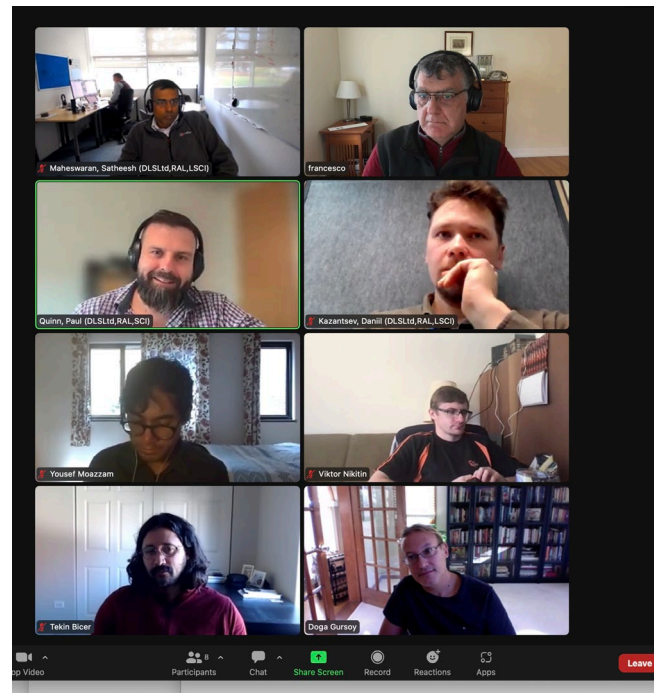
Step	Start (Central Time)	End (Central Time)
Manager submits PAs in Workday to their manager for 2 <sup>nd</sup> level approval after the PA normalization session	After October 27 – you will be notified by HRS when to submit your PAs in Workday	No later than Wednesday, November 2 12:00 pm
Manager's Manager approves PAs in Workday (the 2nd level manager approval)	Once prior step completes	No later than Wednesday, November 9 12:00 pm
HRM submits PA approval in Workday (ALD release)	Monday, November 14	No later than Monday, November 14 12:00 pm
Manager releases PA in Workday to employee one to two days prior to PA discussion	Tuesday, November 15	No later than Monday, December 12 12:00 pm
Manager holds PA meeting with employee and acknowledges the PA discussion occurred in Workday	One to two days after prior step is completed	No later than Wednesday, December 14 12:00 pm
Employee enters comments & acknowledges PA in Workday	Once prior step is completed	No later than Friday, December 16 12:00 pm

# PA - DEI

- Leadership initiative, not driven by HR
- Embedding DEI and Core-values in performance appraisal enable us to pivot our thinking:
  - It is a way personify our approach to DEI, reflecting on impact at a personal and at an organizational level.
- I will drive important open discussions with line manager about how we embed these values in our daily work and our objectives.
- It may drive personal development goals.
- It will enable management to recognize staff who spend considerable time and energy to drive change in PSC. Equally, the overall performance appraisal rating will not be negatively affected by the absence of specific contribution.
- We do not want to drive change by imposing a uniform model, but instead encourage creativity and personal responsibility for change.



# INTERNATIONAL COLLABORATIONS





# SPECTROSCOPY UPDATE: MOVING 20-ID TO 25-ID

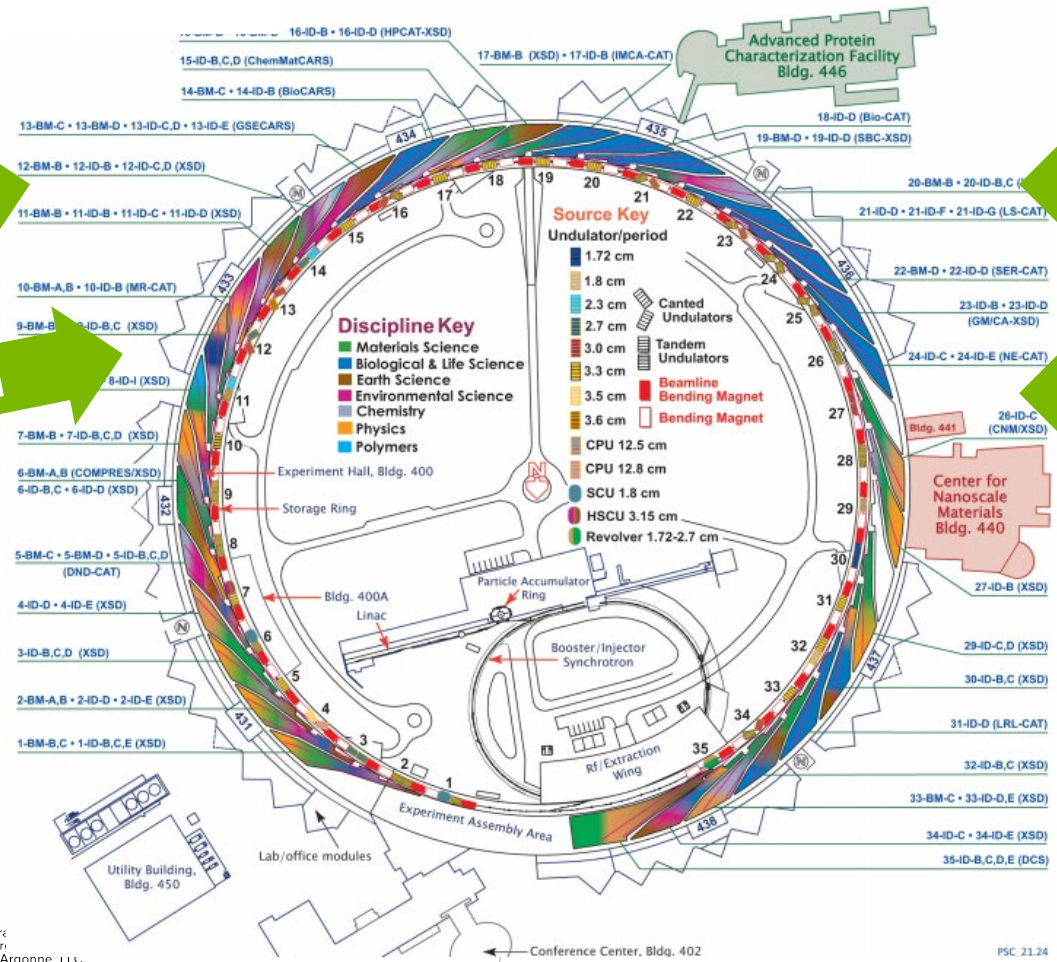
- Spectroscopy Group Beamlines and Science
- High-level design of S-25
- Moving from 20-ID to 25-ID
- Commissioning 25-ID

11-ID-D

9BM

20-ID and BM

Empty 25-ID



# SPECTROSCOPY GROUP

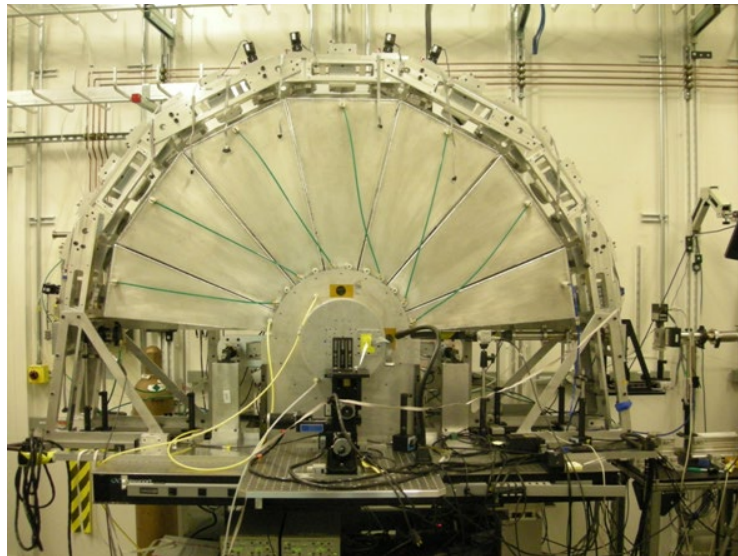
## Operates three beamlines at the APS

- 9-BM-B,C beamline is a quick-scanning XAFS capable of extended XAFS measurements in a few seconds.
  - Optimized for low-energy measurements including P and S K-edges
  - Full *in-situ* and *operando* catalyst studies
- 20-BM-B beamline is primarily dedicated to XAFS.
  - Flexible capabilities for confocal imaging and micro-spectroscopy.

# 20-ID PROGRAMS

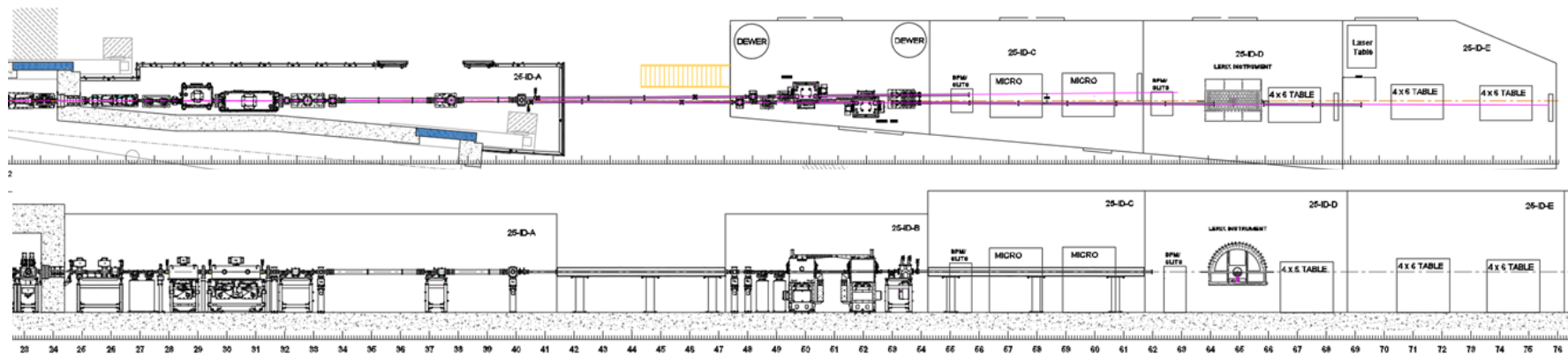
## Two experimental stations: B and C

- 20-ID-B has dedicated facilities for micro-XAFS and an x-ray Raman spectrometer (LERIX).
- 20-ID-C provides multiple options for high-resolution fluorescence spectroscopy and x-ray emission spectroscopy.



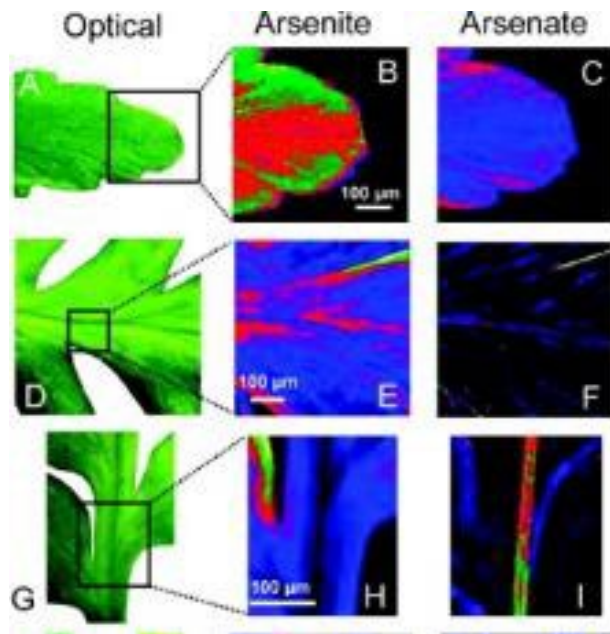
# NEW BEAMLINE ON GREENFIELD SPACE

- Beamline has a canted front end and both branches run independently.
- Beamline provides major upgrades to current programs at 20-ID.



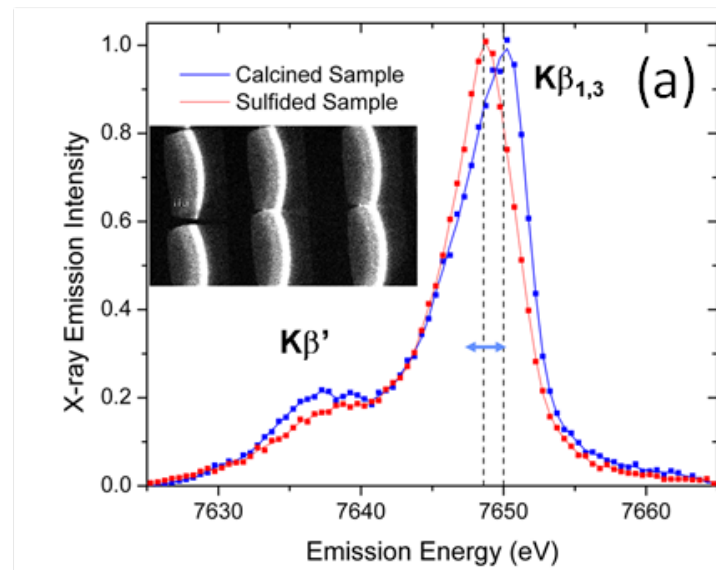
# MICROPROBE BRANCH (OUTBOARD)

XRF mapping and micro-spectroscopy:  
Chemical mapping with rapid variable focus  
0.5 to 10 microns.



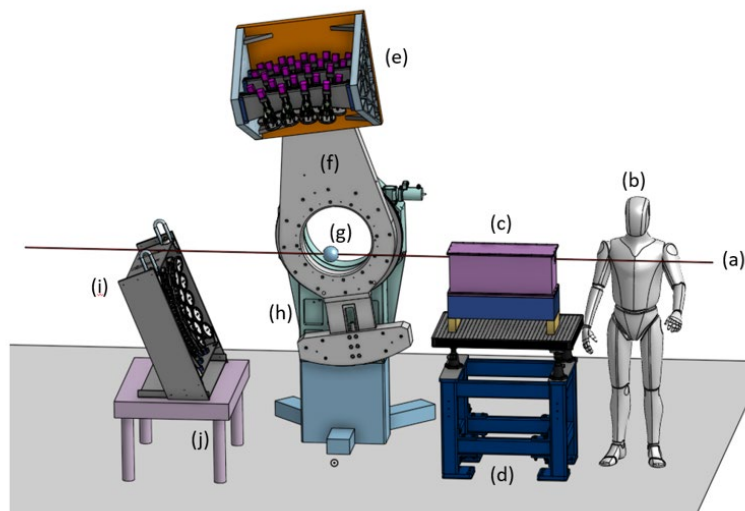
X-ray emission spectroscopy for spin-state,  
valence, ligand measurements.

Co emission from catalyst  
using miniXS – 30 sec



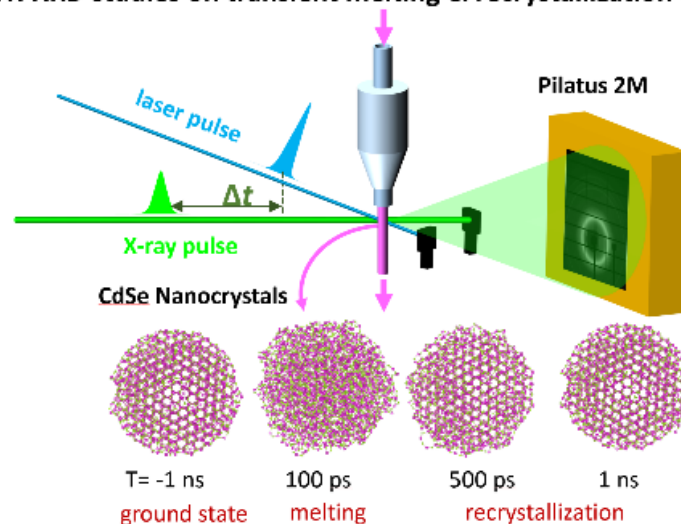
# LERIX AND TRXS BRANCH (INBOARD)

New APS-U LERIX spectrometer: Probing soft x-ray transitions with hard x-rays.



Time Resolved X-ray Science (from 11-ID-D): Multiple timescale electronic and structural dynamics underlying material properties.

TR-XRD studies on transient melting & recrystallization of QDs



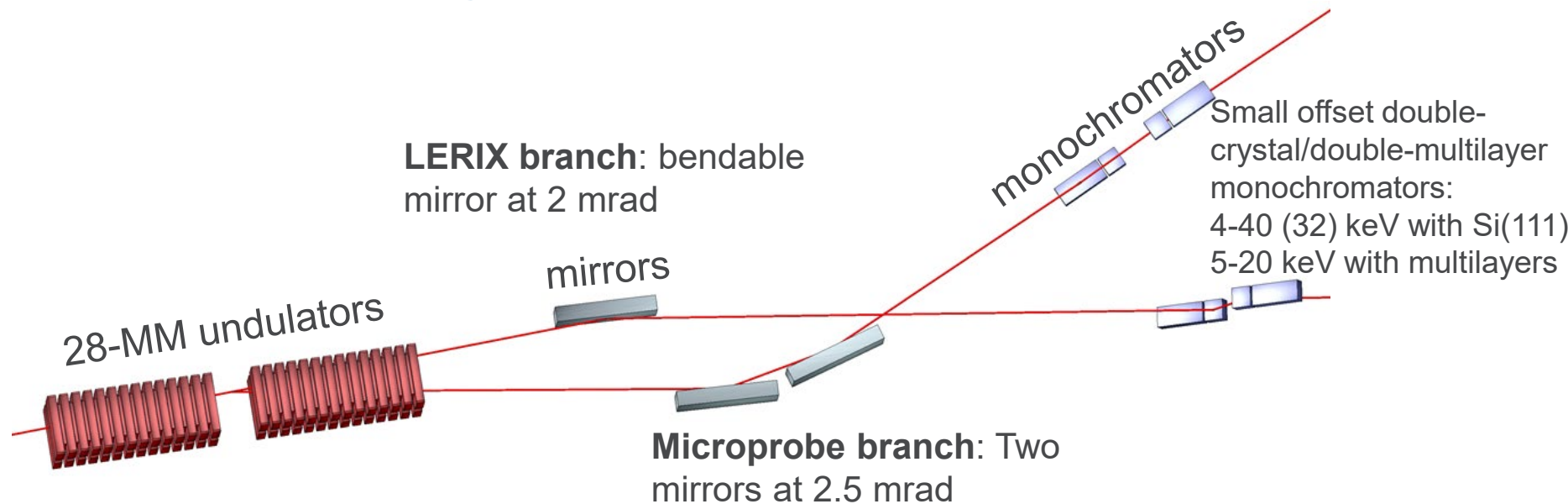


# OVERALL DESIGN GOALS

- Microprobe (outboard) branch:
  - 4-32 keV (all elements K or L edges heavier than K)
  - Microprobe with zoom capability (0.5 – 10  $\mu\text{m}$ )
  - Multilayer mono option for non-resonant applications
  - ~30-cm separation from inboard branch
- LERIX (inboard) branch
  - 4-40 keV (covers a few applications above 32 keV)
  - Possibility for better than Si (111) resolution
  - Multilayer mono options for non-resonant applications
  - Space for multiple end stations for both LERIX and TRXS

# BASIC OPTICAL LAYOUT

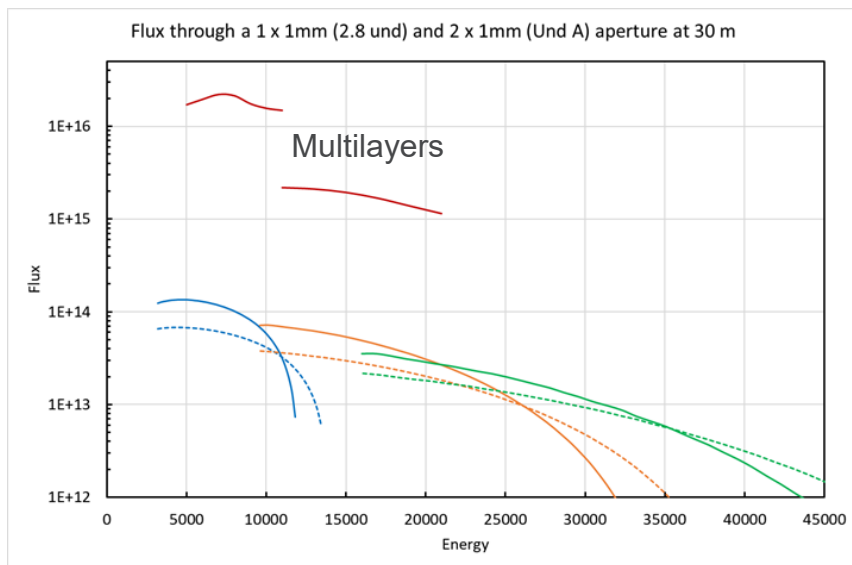
## Horizontal deflecting mirrors to separate two beamlines



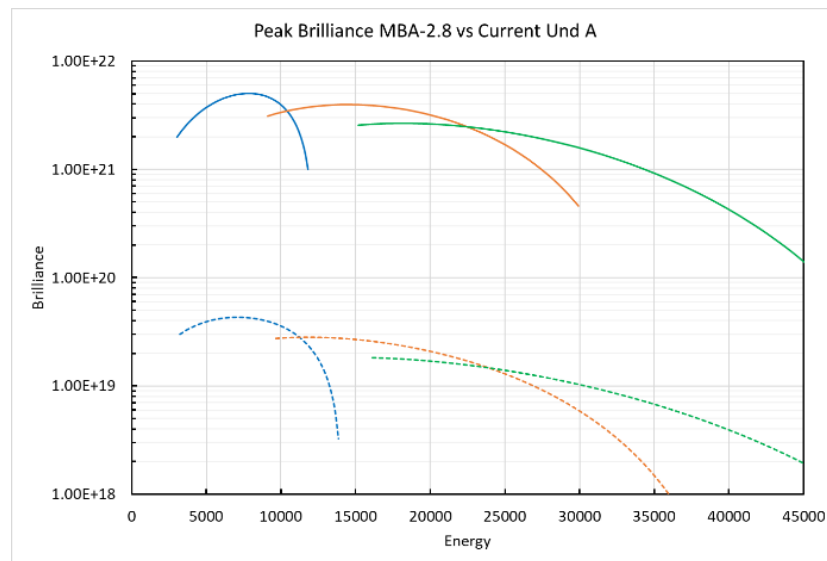
# 28-MM UNDULATOR FOR BOTH BRANCH LINES

- Provides full coverage of our energy ranges
- Initial operation with Undulator A (dashed lines)

## Flux



## Brilliance

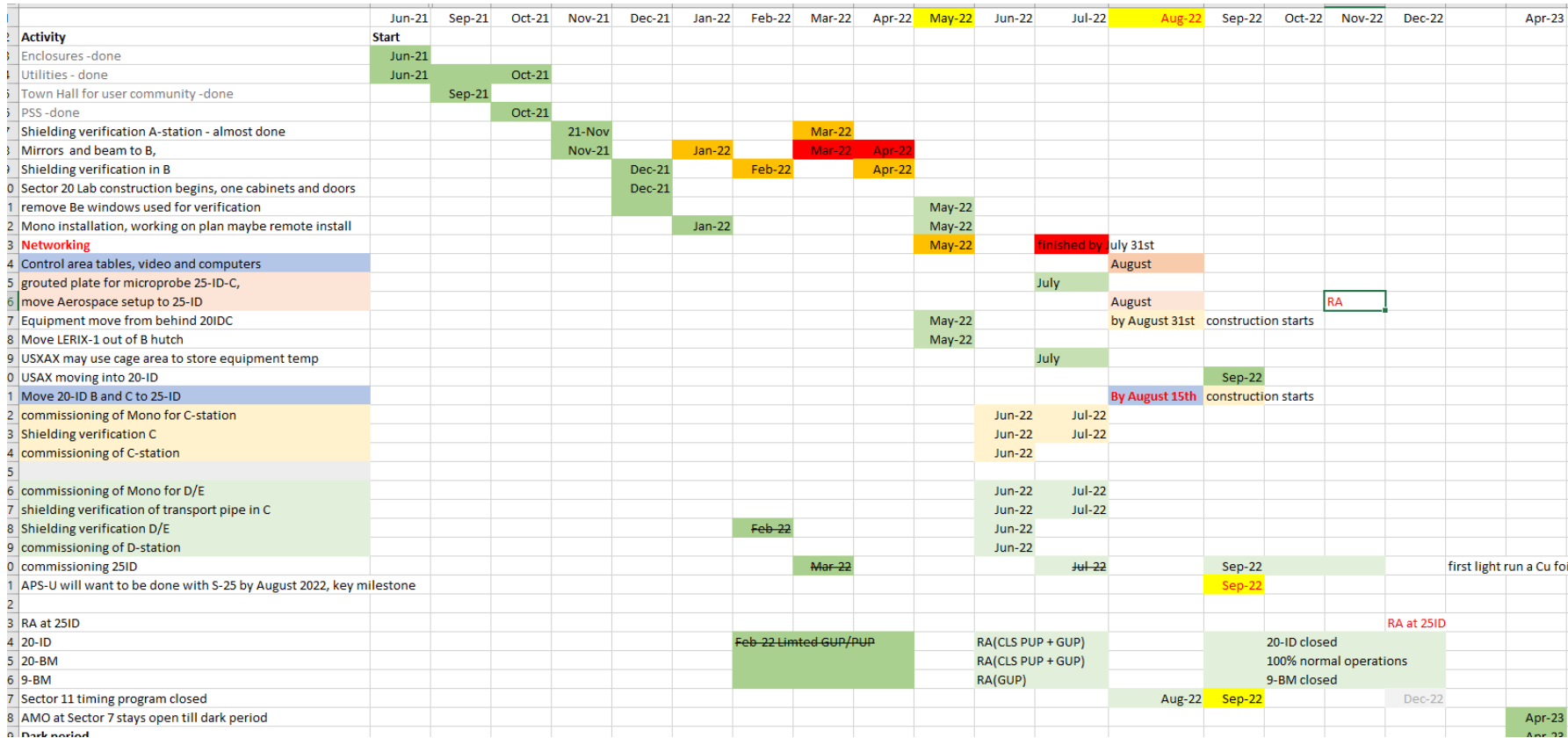


# PROJECT TEAM MEMBERS

## Sector 25

- Conception design: Steve Heald
- Project management: Robert Winarski
- Engineering: Jonathan Knopp
- Procurement: Tim Graber
- Controls: Dale Brewé
- Optical design and specifications: Xianbo Shi
- Optical fabrication: Elina Kasman and Ray Coley

# TRACKING/PREPARATION ACTIVITIES



# CLOSING 20-ID AND BEGINNING OF 25-ID



July 29, 2022

# AUGUST THE BIG MOVE: TEAM EFFORT

Tasks completed		Monday	Monday	Monday
Monday	Install shelves Get carts ready	Riggers move tables to S-25; moved 3 tables, grouted plate table was stuck took down motor put one bike to take LERIX table took pictures	run motor cables	signal cables for 300mm table organize bnc cables
Tuesday	Move equipment Work on Gas Move motor Move some cables open labrinth	Tuesday	Tuesday	Tuesday
Wednesday	Pull out all the Work on Gas Bring another Start organizing Mark floor at	Replaced gas panel Took long CAT6 Mark coordinates put up a cable ladder organized step put one more bike	set up air lines install 2nd motor rack	set up Aerospace signal chains organize gas line tube bin signal cables for mp table
Thursday	day off	Wednesday	Wednesday	Wednesday
Friday	Prepare table Move 300mm Unmount and Take more up Move tools and Finish install Installed web Start installation organize units	Wednesday	Thursday	Thursday
		Move grouted table clean tape and Move Aerospace	clean out more from unpack SR570s continue air-lines	install last two phytron drivers hook up gas lines for D station both tables test motors in C station, slits, kb mirrors test sr570 control order 3 more moxa's for controlling SR570s -CJS order another gas line tube bin -MP
		Thursday	Friday	Friday
		experimental equipment photo shoot discussed gas lines	Move 300mm KB mirror setup Moxa for SR570 setup 4 signals for ion finalize air-filter with remove gas bottles at try moving a motor w holders for plastic bins in both 25-ID-C and D	testing motors in C hutch optical stack, IO: IW CJS mounting monitors in the hutch -Mark moving filter control to S-25 -skd measure Cat6 cables for satellite phytron drivers, 42 ft 8x6 -Mark install remaining MaxVs in VME crate -Mark, SDK
		Friday		
		take down motor Put lerix table a Put up motor rack Unpack and ins Move control table install Cat6 cables discuss controls		upgrade desks to 8ft sections from 8-ID install transition boards Test limits using hall-affect -CJS (turn lead screw possible) Mike/SDK review motors cables we need verse what we ordered found cables for filter control

# TEAMWORK



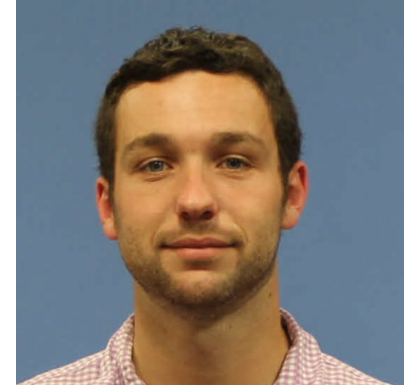
Mike Pape



Chengjun Sun



Debora Motta Meira



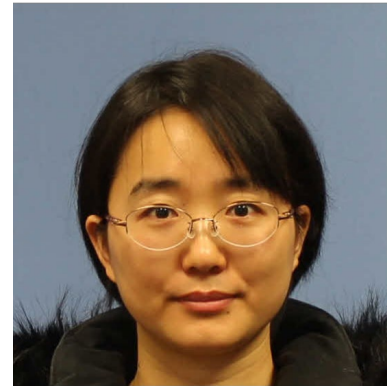
Mark Wolfman



Inhui Hwang



Aleks Solovyev



Yanna Chen



George Sterbinsky



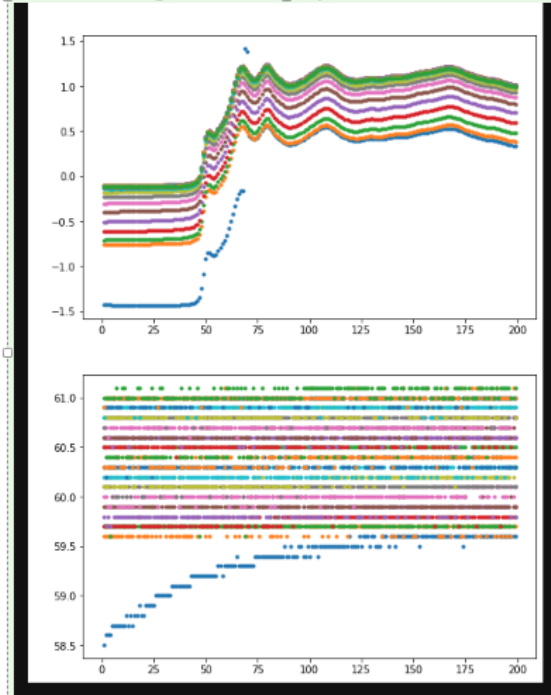
# S-25 COMMISSIONING

- Test monos' motor temperature for consecutive scans
- Alignment of beams: front-end slits, mirror, masks, monos to end-station
  - Get central cone of ID: 'Crazy Steering Saves the Day'
  - Move beam pipes
- Align WB slits to mirrors, installation of encoders
- Implemented and initial testing of XAS-type energy scan
- Improve mirror vacuum: bake and high power
- Calibrate mono gaps for Si(111) and MTLs; establish motions for switching
- Verify energy range of MTLs; gap and height
- Activate and test mono internal feedback
- Verify energy calibration of monos over full range and repeated scans
- Establish protocol for mirror vertical translations for Pt, Si, and Rh and focusing

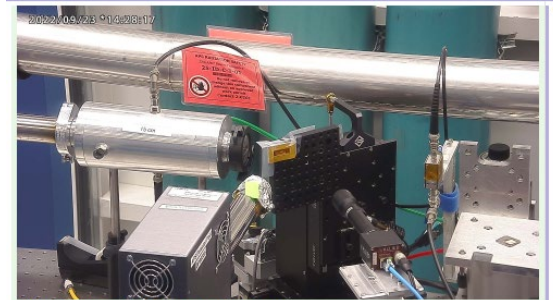
# COMMISSIONING TESTS

## MONO MOTOR TEMP

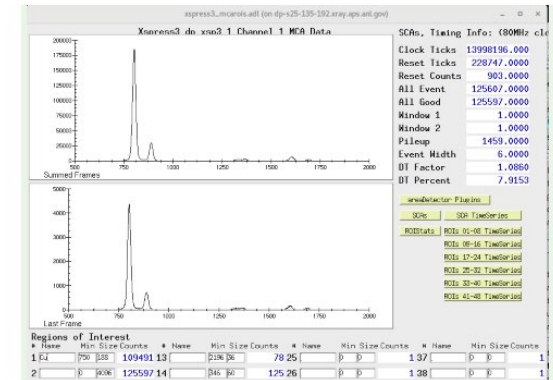
Scans ran overnight. Scans and temperature seems stable



## VORTEX DETECTOR



Physical layout of the fluorescence setup



# COMMISSIONING 'CRAZY STEERING'

9/24/2022 – 10/3/2022: 'CRAZY STEERING'

- With help from Kurt Goetze and Shawn (MCR) this morning, we moved the S25ID XBPM down and steered the beam up. Skipping all details, we have steered the beam up by +90  $\mu$ rad and got the beam centered on the GRID-XBPM located at its nominal position. The undulator beam should be centered on the Exit Mask now, as accurate as Survey/Alignment has put it.
  - Si(111) Flux  $10^{13}$
  - 100x more flux with ML
- Next mono gap value



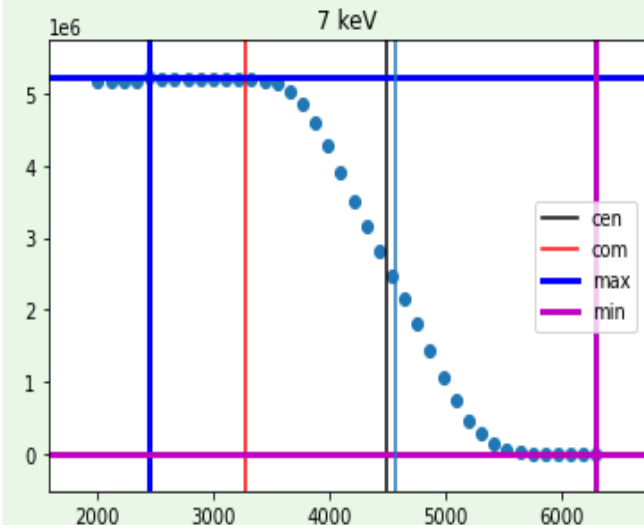
# GAP DETERMINATION

$$\text{Height} = 2 * \text{gap} * \cos(\theta)$$

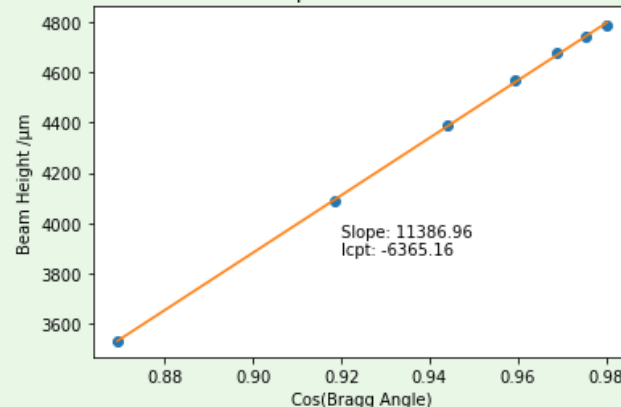
MANY KNIFE-EDGE SCANS

SLOPE IS EQUAL TO 2\*GAP

Knife edge scan



Mono Gap Calibration (25-ID-C)



- Survey gap adjusted by ~500 microns for MicroProbe Branch
- Working on LERIX Branch

# COMMISSIONING

## ENERGY SCAN IN EPICS

**25idd - Energy Scan**

Energy Setup | Scan Setup

	Rel. Energy (eV)	Abs. Energy (eV)	Wavenumber (1/Ang)	Step Size (eV)	Step Size (1/Ang)	Integration Time (s)	Steps
Base		7000.000000					
Region 1	-30.000000 25idd.eScan.region_1_E0	6970.000000		10.000000		1.000000	27
Region 2	-30.000000	6970.000000		1.000000		1.000000	60
Region 3	30.000000	7030.000000	2.80239	0.100000		1.000000	52

Integration Time Weighting: 1.250000

E to k factor: 3.820

Total steps: 139

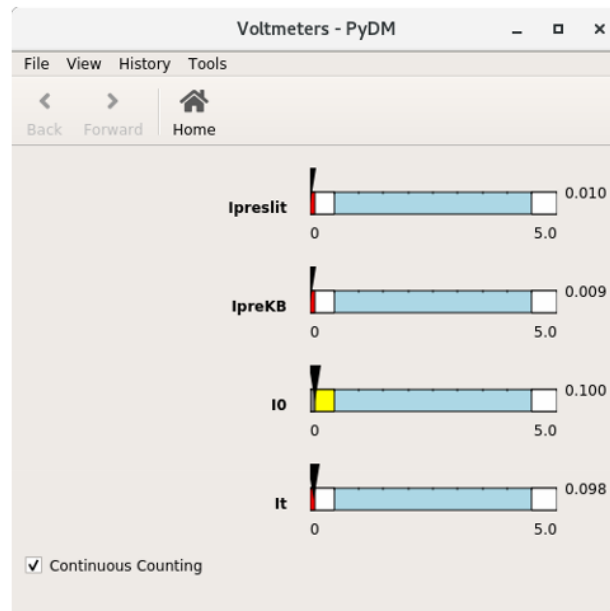
Buttons: Changed, Load, Done, Start Scan, Done, Go, Pause, Stop

Calcs, Array Calcs, Mono Tracking: 0.000000, Mono Energy (eV): 8000.000000

Scan, Sequences, Stepping (eV): 0.000000, off, ID Stepping, ID Energy (keV): 8.160

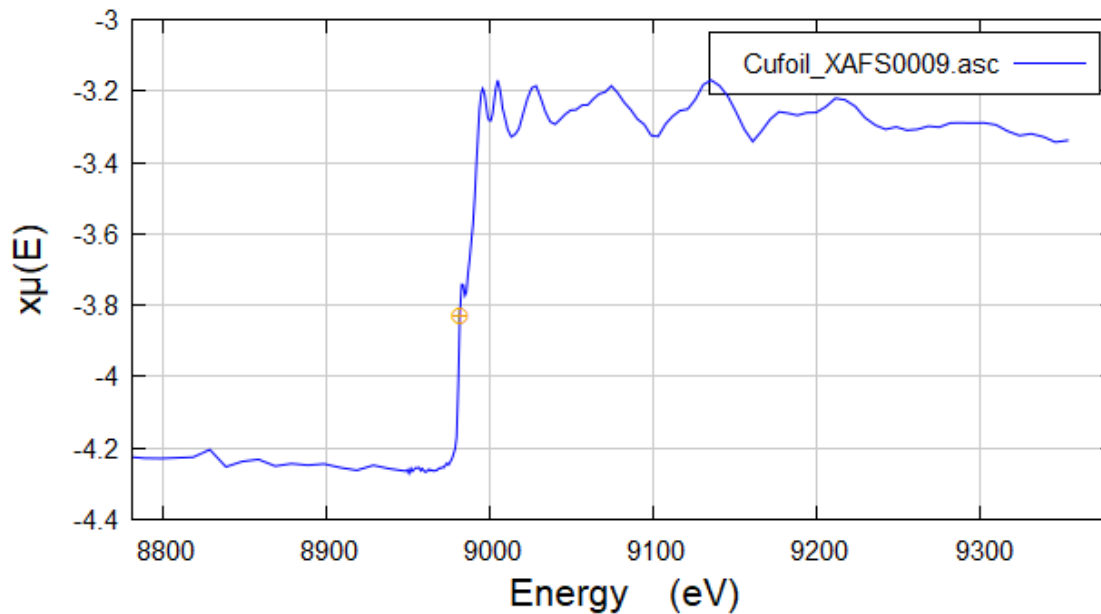
## EASY TO READ VOLTMETER

To start voltmeters window (just upstream tables for now):  
start\_voltmeters\_25idd  
start\_voltmeters\_25idd



# COPPER EXAFS SCAN

Cufoil\_XAFS0009.asc in energy



# UPCOMING MILESTONES

- First PUP experiments at end of November (Aerospace)
- SPC Group and TRR Group member trainings in Nov/December
- SPC RA proposal system is open for Spectroscopy Group for 22-3
  - First experiments on the books include:
    - XES with Si(111) and ML before and after the upgrade
    - XAS of dilute systems

# QUESTIONS? AND FEEDBACK







# APS-U PROJECT UPDATE



**Jim Kerby**  
APS Upgrade Project Manager  
PSC All Hands Meeting  
October 26, 2022



Argonne National Laboratory is a  
U.S. Department of Energy laboratory  
managed by UChicago Argonne, LLC.





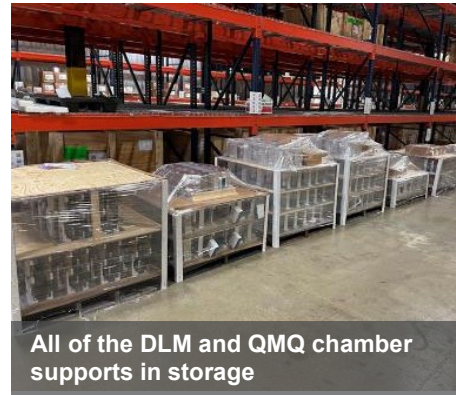
x500



Some of the recently installed temperature monitoring systems



Bunch Lengthening System Assembly



All of the DLM and QMQ chamber supports in storage



\$815M



The CSSI Grand Tube under manufacture in Spain



\$1.5B

# A BUSY FEW MONTHS!

Project / PSC reviews completed and upcoming:

- a. Shutdown Preparation Readiness Review: August 16-18
- b. Experimental Systems Advisory Committee (ESAC): each morning of August 17 and 24
- c. Argonne EVMS Surveillance Review: August 23-25
- d. Beamline Radiological Review: September 12
- e. Accelerator Readiness Review Update: September 21
- f. Director's Review: October 4-6
- g. Machine Advisory Committee (MAC): October 13-15
- h. Accelerator Radiological Review: October 28
- i. OPA Review of the APSU: November 15-18
- j. Scientific Advisory Committee Meeting: November 16-17

Extraordinary lift by staff, with special thanks to our external reviewers on each committee.

Very positive and constructive conversations to help us make the most robust plan possible

going forward to – and beyond -- the upgrade

# CURRENT STATUS AND SCHEDULE

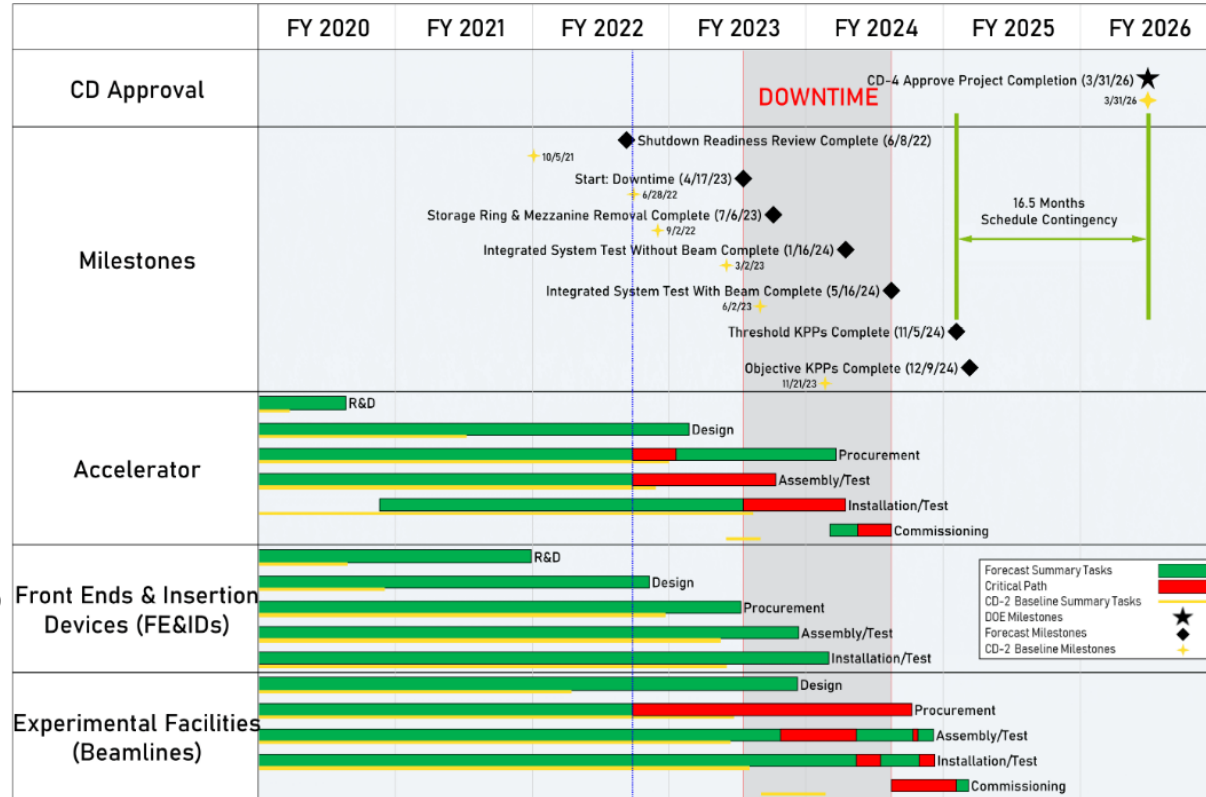
User operations scheduled to end April 17, 2023

Accelerator shutdown April 24, 2023

- Plans vetted by shutdown preparedness readiness review

Accelerator component delivery, acceptance and assembly drive the shutdown.

Supply chain and inflation impacts continue; close work with vendors to hold schedule, including finding parallel sources for components



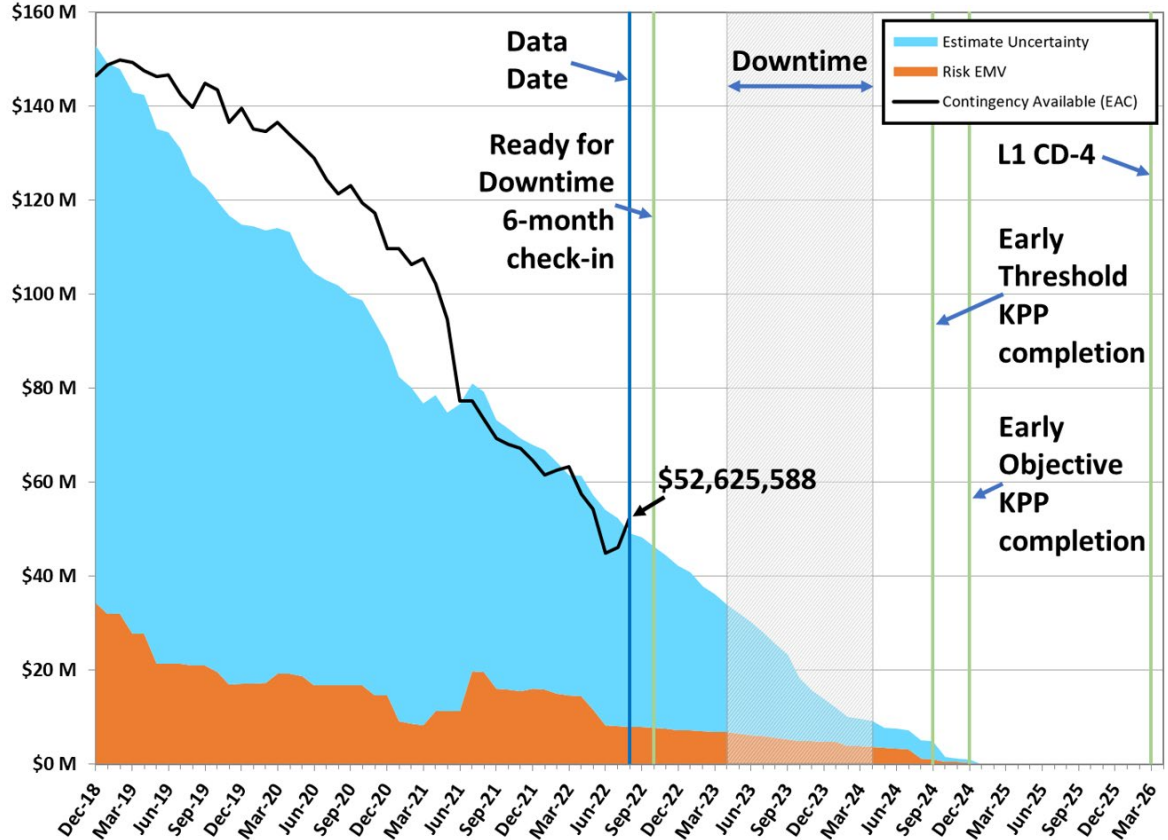
# PROGRESS AND CONTINGENCY

Project exercised scope options to increase cost contingency to adequate level - 24% of work to go - without affecting delivery of Objective KPPs

- “Major Item of Equipment” and other means under development to enable full realization of facility capabilities
- New and future capabilities matrix available on through web page

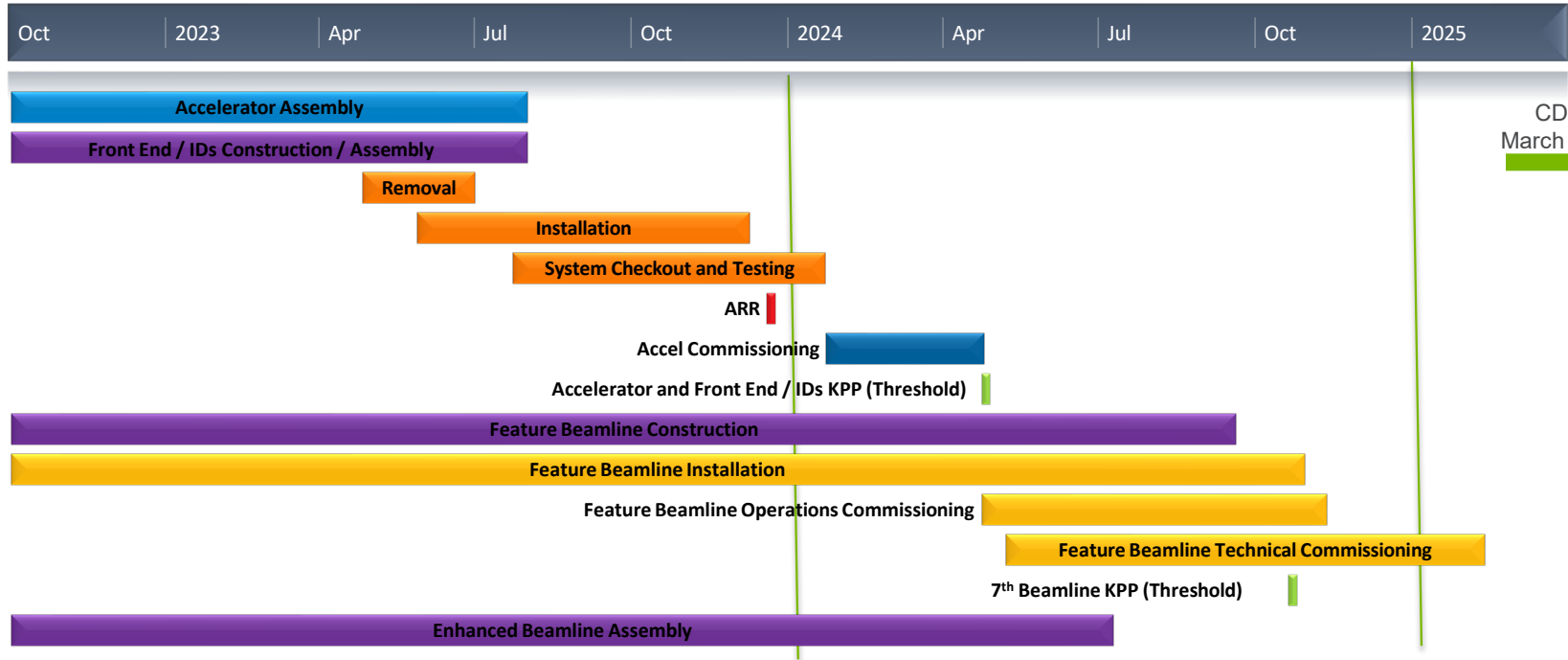
Schedule to the shutdown is the short term priority

Close interactions w/ our industrial partners is critical

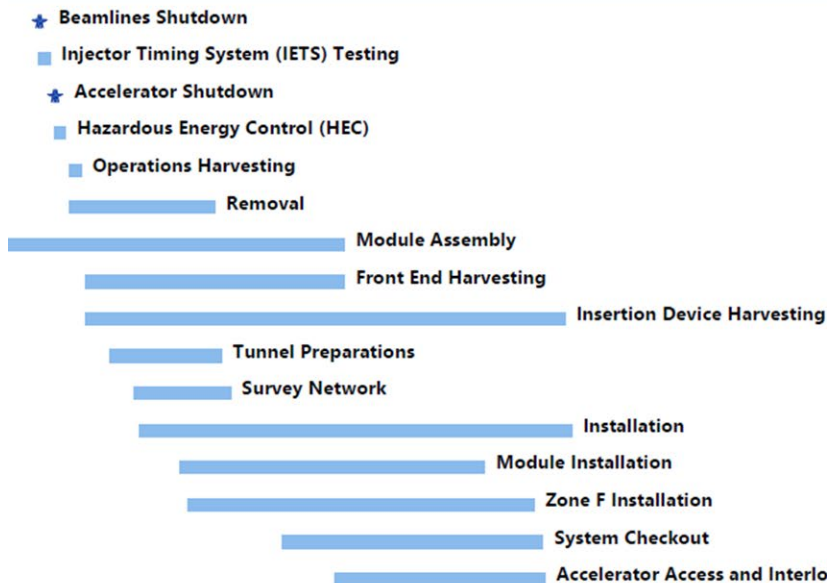


2022

2025



# INSTALLATION SCHEDULES



Beamline	FY22				FY23				FY24				FY25			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
HEXM (20-ID)			▲													
ISN (19-ID)																
CSSI (9-ID)																
XPCS (8-ID)																
12-ID																
11-ID																
3DMN/ATOMIC (34-ID)																
Polar (4-ID)																
38-AM																
CHEX (28-ID)																
PychoProbe (33-ID)																

- Sector Site Preparation
- Installation of Shielded Enclosures, SI and Utilities
- Complete Component Installation/Survey/Validation
- Shielding Verification
- Commissioning
- ▲ Access to LBB for Installation
- Installation of 9-ID Flight Path System

- R&I planning has been redone, bottoms up, accounting for parallel work in sectors around the ring

# BEAMLINE COMMISSIONING

Integrated Plan for ALL beamlines in development

Most effective return to User operations across the facility is the overarching goal

Feature Beamlines largely driven by construction / deliveries

Schedule of the remainder of beamlines to be set based on readiness, complexity, ...

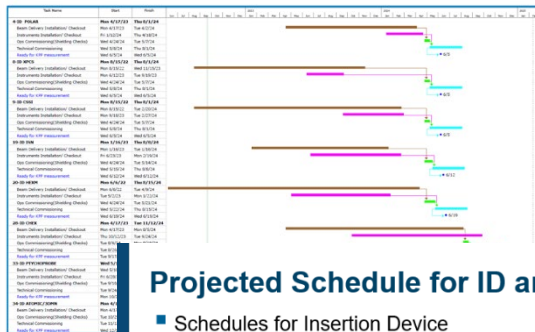
XSD / APSU leading development of planning

- Review of resource needs and leveling

- Integration with accelerator commissioning plan

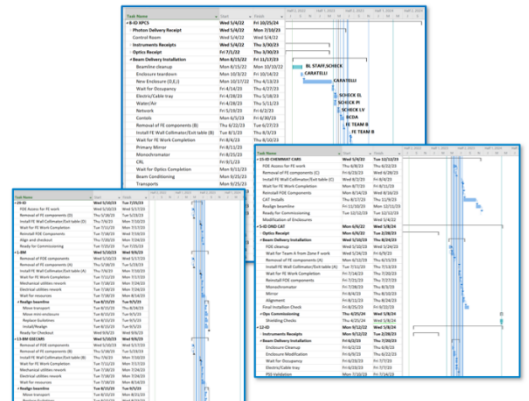
## Beamline Installation Schedule

- Beamlines will be built in series using dedicated technician teams
- Technician teams need to be coordinated (example: installation of RSS components requires multiple tech types working together)



## Projected Schedule for ID and BM Beamlines

- Schedules for Insertion Device (ID) beamline installations designed around shielded enclosure installation (component delivery) dates from vendors
- ID front-end and BM work based on dark time schedule
- APS-U responsible for beamline component technical verifications
- Operations handles beamline commissioning and preparation for user operations



Director's Review of APS-U October 4-6, 2022





# SUMMARY

172 days to go! We will continue to communicate updates on a monthly basis (check the web page!)

The reviews have confirmed and helped our planning to become more robust. The strength of the team is noted by all.

Planning for 'APS after the Upgrade' is under way. More news to come.

## Upcoming Reviews

- Accelerator Radiological Review: October 28
- OPA Review of the APSU: November 15-18
- Scientific Advisory Committee Meeting: November 16-17

Thank you for your continued interest in, support of, and safe work conducted on behalf of the Lab, PSC and the Upgrade

# COMMUNICATIONS

APS Upgrade web page on the APS website



- <https://www.aps.anl.gov/APS-Upgrade>

APS Upgrade web page on the Argonne website

- <https://www.anl.gov/aps-upgrad>

172 days to the shutdown!

The Advanced Photon Source  
a U.S. Department of Energy Office of Science User Facility



**THE APS UPGRADE: BUILDING A BRIGHTER FUTURE**

The future of the Advanced Photon Source is about to get brighter. The APS is scheduled to undergo a massive upgrade that will replace the current electron storage ring with a new, more powerful model.

- APS Upgrade Home
- About the APS Upgrade
- FAQ
- New Storage Ring
- Feature Beamlines
- Videos
- People of the APS Upgrade
- Workshops, Meetings & Town Halls
- Organization Chart
- Sharepoint (Password Required)
- Documents
- Comparable Beamline Options for Users
- Progress in Pictures

**APS USER EXPERIMENTS SCHEDULED TO END APRIL 17, 2023**

**INSTALLATION PERIOD SCHEDULED TO BEGIN APRIL 24, 2023**

The APS Upgrade Project will require a storage ring installation period, during which the APS will pause operations for one year. User experiments are scheduled to end on April 17, 2023, with the installation period scheduled to begin one week later, on April 24, 2023.

Consistent with these dates, the last APS operations run is scheduled to start on Jan. 31, 2023, and end on April 17, 2023. The upgraded APS will return to operations after the 12-month installation and commissioning period, though the initial operations will be at reduced current and availability as the machine is turned up. Regular updates will be provided on this website.

**APS Upgrade News**

- 10.14.2022  
Fleeting IDEA Beamline Will Provide Lasting Value to the Advanced Photon Source
- 10.03.2022  
Deconstruction Site: 8-ID Beamlines Ready for Their Upgrades
- 09.28.2022  
Toasting the Spectroscopy Program at APS Beamline 20-ID

# 25+ YEARS SERVICE AWARDS

25 years

**Geoff Pile**

30 years

**Kurt Boerste**

**Bruce Epperson**

**Robert Wright**

**Randall Zabel**

**William Jansma**

**David Lichty**

**Emil Trakhtenberg**

**Nicholas DiMonte**

35 years

**Roger Dejus**

# IMPACT ARGONNE AWARDS RECIPIENTS

## Diversity and Inclusion Results

- **Arista Thurman**

## Enhancement of Argonne's Reputation

- **Connie Vanni, John Hammonds**

## Extraordinary Effort

- **Camelia Mititelu, Andrew Stevens**
- **Elizabeth Schmidt**
- **Sunil Bean**
- **Sam Jarvis**
- **Lester Erwin**
- **Kevin Wakefield**
- **Michael Sullivan**
- **Brandon Stone, Jun Qian**



# IMPACT ARGONNE AWARDS RECIPIENTS

## Extraordinary Effort (cont.)

- **Thomas Parchem**
- **Bill Guszczko, Joseph Vanis**
- **Nicholas Kubinski, Glenn Moonier**
- **Quentin Hasse, Matthew Kasa, Susan Bettenhausen, Jason Ackley, Yuko Shiroyanagi, Ethan Anliker**
- **Wenqian Xu, Andrey Yakovenko, Kevin Beyer, Olaf Borkiewicz, Leighanne Gallington**
- **Tiffany Kinnibrugh, Tyra Douglas, Charles Kurtz**
- **David Cyl, Jiyong Zhao, Barbara Lavina, Erika Benda, Emily Aran**
- **George Gonzalez, Dean Steinbrenner, Juan Anda, Tony Tantillo, Danny Roeder, Jake Ricken, Dino Canchola, Patrick Farquhar, Tim Clute, Kevin Knoerzer, Ken Kishbaugh**
- **Donald Walko, Don Jensen, Jr., Richard Spence, Alan Kastengren**



# IMPACT ARGONNE AWARDS RECIPIENTS



## Extraordinary Effort (cont.)

- **Charles Kurtz, Xiaobing Zuo, Soenke Seifert, Byeongdu Lee, Kevin Peterson, Antonino Miceli**

## Innovation

- **Ayman Said, Jung Ho Kim, Emily Aran, Thomas Gog**
- **Ken Kishbaugh**

## Significant Cost Reduction

- **Gene Swetin, Jason Carter, Oliver Mulvany, Jon Campbell**

# AWARDS & RECOGNITIONS



Nena Moonier



Timothy Springer



Eric R. Dufresne

# PSC QUALITY ENGINEER – DEPLOYED FROM LAB QUALITY



**Nick Sempowicz**



# NEW STARTERS



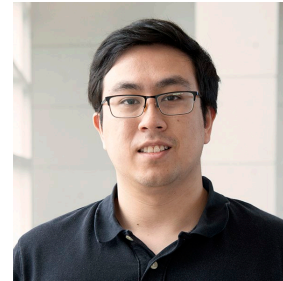
Bryan Monk



Tugba Isik



Naveed Rahman



Michael Prince



Elizabeth Hardt



Justin Schiltz



Juan Ayala



Paul Bednarski



Cunming Liu



Sherese Humphrey

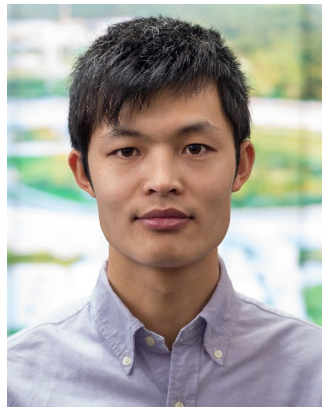
# NEW STARTERS



Tyler Eastmond



Matthew Hotham



Jian Zhou



Henry Shi



Juanjuan Huang



Rex Green

Not pictured:

Derrick Robinson

Kenneth Swierczek

Austin Sahr



Please do not hesitate to reach out  
Always welcoming feedback !  
[Ichapon@anl.gov](mailto:Ichapon@anl.gov)



Argonne National Laboratory is a  
U.S. Department of Energy laboratory  
managed by UChicago Argonne, LLC.

