

APS/Users Monthly Operations Meeting

G. Brian Stephenson
August 31, 2011

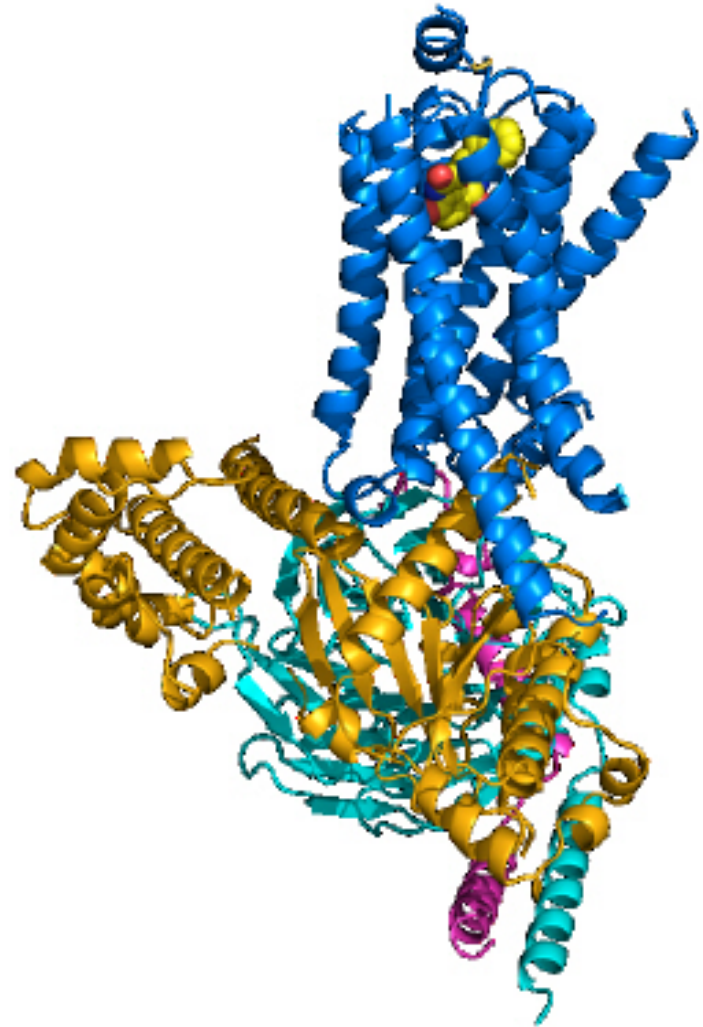
Agenda

- 2:30 p.m. Refreshments
- 2:45 p.m. APS Update – Brian Stephenson
- 3:10 p.m. APS-U Roadmapping – Derrick Mancini
- 3:25 p.m. ANL-LBL FastCCD:
Current Status and Future Prospects – Alec Sandy
- 3:45 p.m. Adjourn



Sending a Message: How Receptors Talk to G Proteins

- Mechanism by which cells respond to stimuli and trigger hormonal responses, as well as the senses of sight, smell, and taste, has been brought into focus by experiments at GM/CA-CAT beamline 23-ID-B
- Structure of activated trans-membrane receptor in complex with protein has been solved for first time
- This breakthrough will pave the way to new research avenues in drug discovery, cell signaling, and cellular regulation

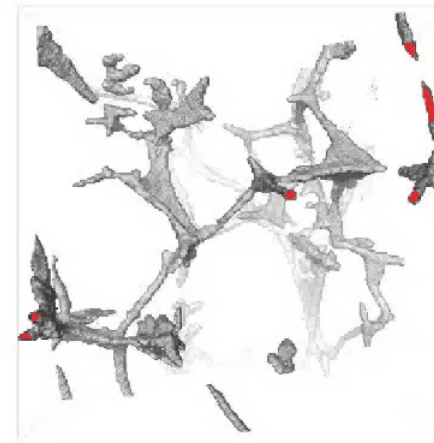
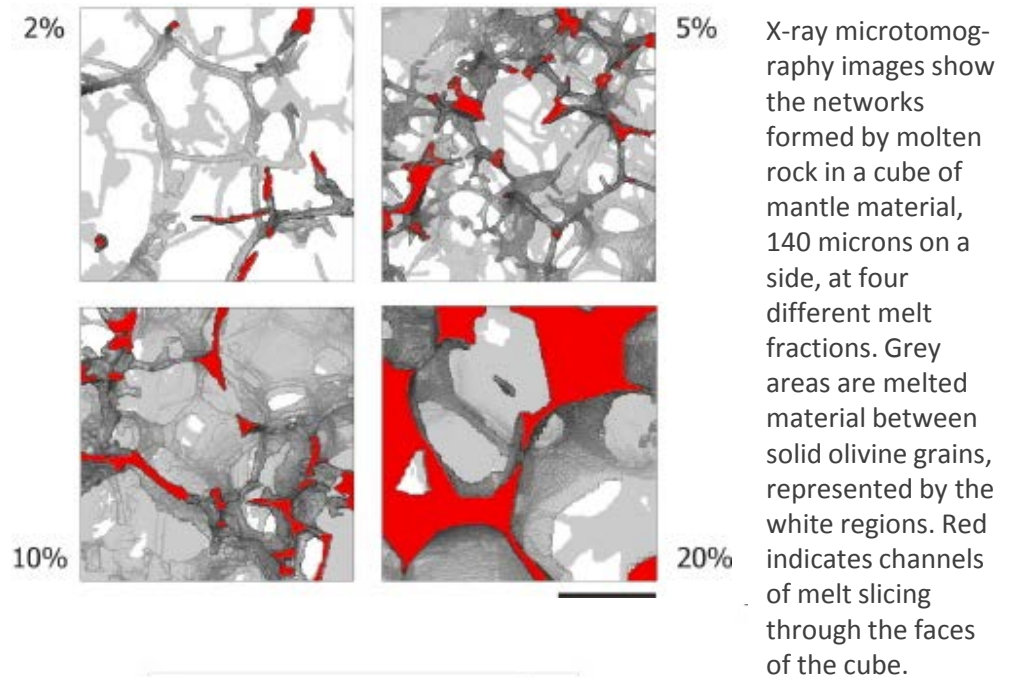


The structure of the β_2 AR-Gs complex.

Søren G. F. Rasmussen et al., Nature, [advance online publication, 19 July 2011](#)

Visualizing the Flow of Molten Rock through Seabed Mantle

- Where Earth's tectonic plates drift apart at ocean floor spreading centers, mantle rock partially melts and seeps upward, solidifying to form new crust
- Geologists have difficulty reconciling estimates of the permeability of partially molten mantle with analyses of rate at which molten rock ascends
- Microtomography experiments utilizing XSD beamline 2-BM at the APS have obtain unprecedented 3-D x-ray images of melted rock, for the first time directly imaging intricate network formed by the molten fraction within a mainly solid rock
- The results offer a more sophisticated picture of rock porosity and a resolution of the discrepancy between permeability and melt velocity



Wenlu Zhu et al., [Science 332, 88 \(2011\)](#)

Electrical Equipment Inspections

- Five-year program to inspect all existing non-NRTL electrical equipment completing in September
- Thanks for making it a success, almost complete
- Please let us know about any problems for completion by end of FY, and continue to inspect newly-arrived equipment



Increased Focus on Safety

Subject: Labcast: Message from Bill Brinkman, Director, DOE-SC / Argonne's safety record

To: Argonne Lab Employees
Subject: SC-1 Safety Message

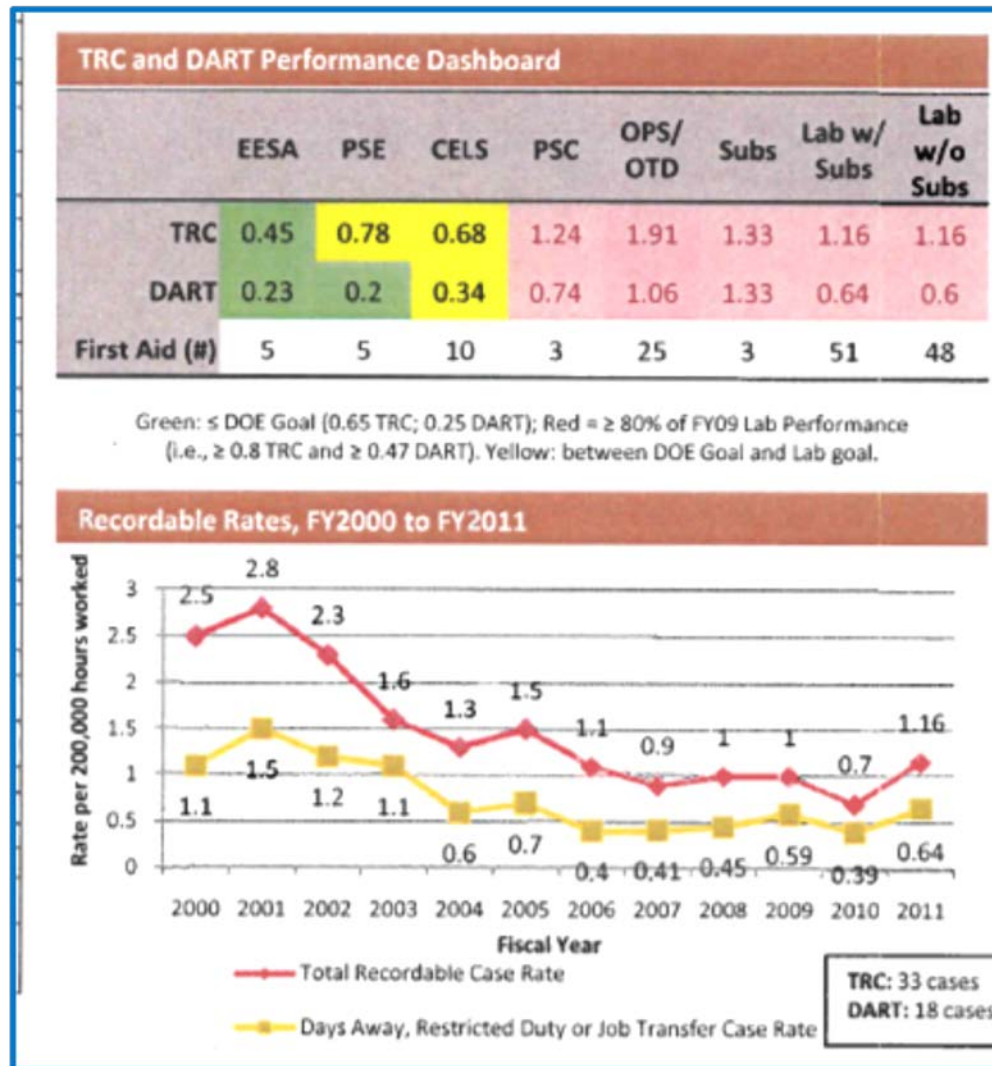
Argonne National Laboratory has a rich history of delivering transformational research across the globe. But the lab's ability to sustain its scientific contributions is directly linked to its ability to conduct its research and supporting operations safely. Accordingly, I am quite disappointed with the number of recent injuries at the laboratory. I spoke this week with your Director and the Argonne Site Office about the lab's current safety record and the necessity to identify causes, show improvement, and thereby demonstrate accountability.

Safety is everyone's responsibility, and one that must be felt personally. Industry's safety leaders commit to the belief that all accidents are preventable and that a realistic goal is one of zero injuries. I strongly encourage each of you to plan your work carefully, consider and mitigate hazards thoughtfully, and strictly conduct your work in accordance with documented laboratory practices.

"Safety is our full-time job, don't make it a part-time practice."

Bill Brinkman, Director
Office of Science

- APS and Argonne safety statistics not as good in FY11 as FY10
- We need to refocus our attention on safety



APS Safety Action Plan - Group Meetings

- We must constantly improve our work practices and communicate safety awareness to all staff
- This month each group is having a discussion about the application of Integrated Safety Management in their everyday work
- How have the meetings been going?



APS Space Planning

- With Upgrade, we will run out of 'unused' floor space for staging construction, temporary storage, etc.
- Clutter and poor housekeeping are a safety concern
- First step – APS Space Use Guide drafted
- Part of a long term plan being developed to expand and organize office, lab, staging, and storage space
- Want to get feedback from all on both Guide and long term plan as we develop them

Advanced Photon Source

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Revision #:	0
Issue Date:	6/8/11
Review Period:	3 years
Supersedes:	N/A
Last Reviewed:	6/8/11

APS Space Use Guide

All areas occupied by the APS shall be assigned to and overseen by one of the APS Divisions or the ALD Office (see [Appendix A](#)). Oversight is the responsibility of the designated Division Director/ALD and responsibilities include:

- Ensuring space is used effectively (e.g., as programs and staffing change, the ALD-appointed APS Space Committee is notified of changes in space needs requirements—including when space is no longer needed—and ensuring that spaces are not used to store materials that are of little value to the APS); and
- Maintaining a professional, uncluttered appearance, and
- Maintaining a safe work environment, that meets Argonne ESH standards.

Site-specific Standards

Experiment Hall

Sector Boundaries — Each sector is bounded by the storage ring, the sector dividing egress aisles (see Experiment Hall Layout, Sector Beamline Areas insert, APS document number [APS_1418307](#)), and three line segments defined by lines connecting the out-board faces of the I-beam columns at the end of the sector. Unless approved by the AES Division Director (AES-DD) as part of a beamline design review process and the APS Deputy Director for X-ray



APS Leadership Personnel Changes

- Sue Marconi is moving from Assistant to ALD for Administration and Finance to a position in the Argonne CFO division
- Connie Markiewicz, formerly Argonne Assistant Chief Financial Officer for Budget Management, will be taking Sue's place as Assistant to ALD for Administration and Finance
- John Quintana is moving from Associate Division Director of the APS Engineering Support Division to the Deputy Chief Operating Officer for Argonne



Connie Markiewicz

Pacesetter: Susan Benda (X-ray Science Division)



Susan Benda took the initiative to reconcile XSD's telephone lines. Susan found 200 user description changes, 25 required disconnects and 17 transfers to other cost centers. The results of this hard work will be an annual cost savings of \$16.3K to XSD.

Pacesetter: Virginia Brown (Facilities Management and Services)

Virginia Brown assumed Custodial Foreman responsibilities for the CLO building and the APS auditorium for an extended period of time.

The 400 area is a showplace for DOE representatives, politicians and dignitaries from around the world who visit and tour the APS facilities. Virginia personally took the necessary actions to see that this area was kept clean and tidy by the custodial staff which exceeded her normal responsibility.



U of C and DOE Reviews of APS

- U of C Review of APS held July 27-29
 - Result was very positive
- DOE Review of APS scheduled for September 12-15
 - Agenda is set
 - Will include plenary presentations in Gallery and breakout sessions every afternoon



DOE/BES Triennial Review of the Advanced Photon Source
September 12-15, 2011
Building 401, Lower-level Gallery (Except as Specified)
Agenda

Monday, September 12 – Facility Performance

- 7:45 a.m. Executive Session (Coffee/Continental Breakfast)
- 8:30 a.m. Welcome by Laboratory Management – Eric Isaacs, ANL Director
- 8:45 a.m. Overview of the APS Facility – Brian Stephenson, Interim APS Director
- 9:45 a.m. Accelerator Operations Overview – Sasha Zholents, APS, Accelerator Systems Division Director
- 10:30 a.m. Break
- 10:45 a.m. X-ray Science Overview – Linda Young, APS, X-ray Science Division Director
- 11:30 a.m. Engineering and Support Overview – Bill Ruzicka, APS,
APS Engineering Support Division Director
- 12:15 p.m. Lunch with APSUO SC, PUC Exec. Committee, CAT Directors and Life Science Council Rep. –
5th Floor Gallery
- 1:15 p.m. ESH Overview – Tom Barkalow – APS, ESH/QA Coordinator
- 1:45 p.m. Magnetism at High Pressures – Daniel Haskel, APS, X-ray Science Division
- 2:15 p.m. Move to Breakout Session Rooms
- 2:30 p.m. Breakout Sessions
- 4:00 p.m. Move to Break/Posters Session – 401, Lower-level Gallery
- 4:15 p.m. Posters Session
- 5:30 p.m. Executive Session
- 6:30 p.m. Reception/Dinner – Argonne Guest House



Day 1 Breakout Sessions

2:30 to 3:15 p.m.	XSD: Chemical and Materials Science	XSD: Inelastic and NRS	XSD Group Leaders #1	ASD: Accelerator Physics and Operations	AES: Mechanical Engineering and Design	AES: Information Solutions
3:15 to 4:00 p.m.	XSD: Structural Science	XSD: Spectroscopy	XSD Group Leaders #2	ASD: RF	AES: Design Drafting	AES: Information Technology
	BL reviewers	BL reviewers	BL reviewers	Acc reviewers	Ops reviewers	Ops reviewers



Tuesday, September 13 – APS Upgrade

- 8:00 a.m. Executive Session (Coffee/Continental Breakfast)
- 8:30 a.m. Biomedical Applications of X-ray Fluorescence – Gayle Woloschak, Northwestern University
- 9:00 a.m. Science Drivers and the APS Upgrade – Derrick Mancini, APS Deputy Director, Facility Development
- 9:45 a.m. Integration of the APS-U and APS Operations – Rod Gerig, APS Deputy Director, Accelerators
- 10:15 a.m. Break
- 10:30 a.m. R&D in Support of the APS-U – Michael Borland, APS, Accelerator Systems Division, Associate Division Director
- 11:15 a.m. Move to A5000 for Discussions with SAC Members
- 11:30 a.m. Discussions with SAC Members
- 12:00 p.m. Executive Lunch Session – 5th Floor Gallery
- 1:00 p.m. Tour of Accelerator and Beamlines
- 2:45 p.m. Break/Move to Breakout Session Rooms
- 3:00 p.m. Breakout Sessions
- 4:30 p.m. Move to Executive Session
- 4:45 p.m. Executive Session



Day 2 Breakout Sessions

3:00 to 3:45 p.m.	XSD: Surface Scattering and Micro-diffraction	XSD: Imaging	XSD: Theory and Software	ASD: Magnetic Devices	AES: Mechanical Operations and Maintenance	XSD: User Admin
3:45 to 4:30 p.m.	XSD: Time-resolved	XSD: Microscopy	AES: Software Services	ASD Group Leaders	AES: Safety Interlocks & Users ESH Support	AES: Site Operations
	BL reviewers	BL reviewers	BL/Ops reviewers	Acc reviewers	Ops reviewers	BL/Ops reviewers



Wednesday, September 14 – User Programs and User Community Interactions

- 8:00 a.m. Executive Session (Coffee/Continental Breakfast)
- 8:30 a.m. APS User Program and Industrial Interactions – Dennis Mills, APS Deputy Director, X-ray Science
- 9:15 a.m. APS/CNM Integration and Coordination – Amanda Petford-Long, ANL/Center for Nanoscale Materials Division Director
- 9:45 a.m. Integration of High-throughput Synchrotron Protein Crystallography into the Drug Discovery Process – Stephen Burley, Eli Lilly and Company
- 10:15 a.m. Break
- 10:30 a.m. Science Talk – Wendy Mao, Stanford University
- 11:00 a.m. Strategic Plan for APS Beyond the APS-U – Brian Stephenson, Interim APS Director
- 12:00 p.m. Lunch with APS Early Career Scientific Staff – 5th Floor Gallery
- 1:00 p.m. APS and the ANL Strategic Plan (roundtable with LD and ALDs)
- 1:45 p.m. Hard X-ray Free-Electron Laser Oscillator – Ryan Lindberg, APS/Accelerator Systems Division
- 2:15 p.m. Break/Move to Breakout Session Rooms
- 2:30 p.m. Breakout Sessions
- 4:00 p.m. Move from Breakout Session Rooms to Full Session
- 4:15 p.m. Imaging Structure and Reactivity at Liquid-Solid Interfaces – Paul Fenter, ANL/Chemical Sciences and Engineering Division
- 4:45 p.m. Combined X-Ray Scattering and Spectroscopic Studies with Picosecond and Femtosecond Time Resolution – Christian Bressler, European XFEL
- 5:15 p.m. Executive Session



Day 3 Breakout Sessions

2:30 to 3:15 p.m.	XSD: Detectors	XSD: Magnetic Materials	PX CAT Staff	ASD: Power Supplies	AES: Beamline Control and Data Acquisition	AES Group Leaders #1
3:15 to 4:00 p.m.	XSD: Optics	XSD: Materials Physics and Engineering	PX CAT Staff	ASD: Diagnostics	AES: Controls	AES Group Leaders #2
	BL reviewers	BL reviewers	BL reviewers	Acc reviewers	Ops reviewers	Ops reviewers



Thursday, September 15 – Writing and Close-Out

- | | |
|------------|--|
| 8:30 a.m. | Executive Session (Coffee/Continental Breakfast) |
| 10:30 a.m. | Close-out |
| 11:30 a.m. | Adjourn |



Advanced Protein Crystallization Facility



- Groundbreaking ceremony for APCF was yesterday
- State of Illinois-funded facility will establish highly automated laboratories and user facilities for the production of proteins and protein crystals from gene sequence data
- Unique state-of-the-art resource for academic and industrial biotechnology and biomedical researchers, serving as a focus for launching new opportunities made possible by large-scale molecular biology, biochemistry, and protein engineering

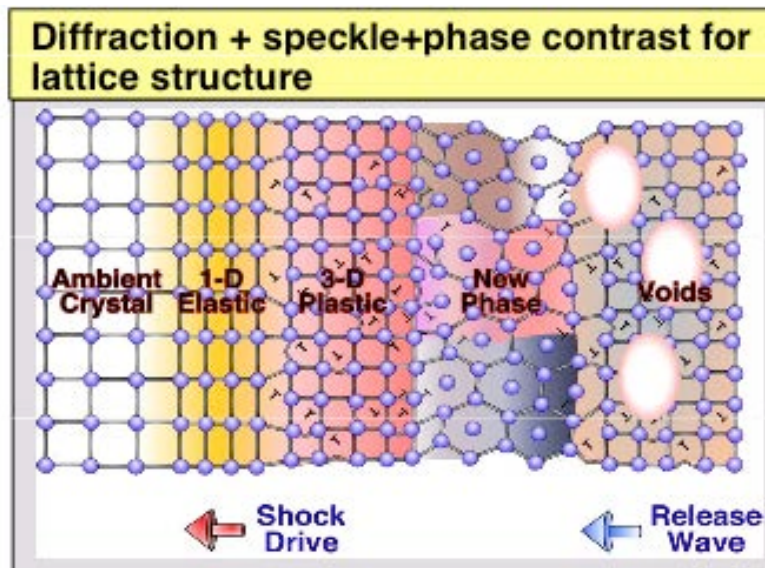
The Advanced Photon Source is an Office of Science User Facility operated for the U.S. Department of Energy Office of Science by Argonne National Laboratory



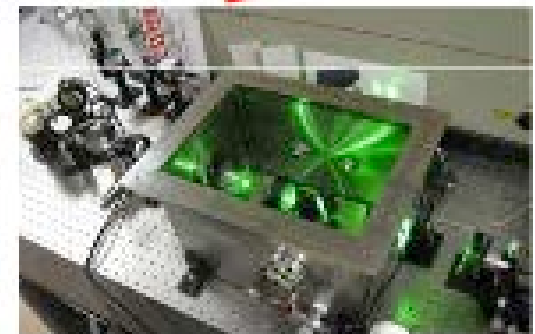
Dynamic Compression Sector

NNSA-supported beamline organized by Y. Gupta (WSU) to study materials in real time under extreme conditions of pressure (e.g. shock waves)

- Diffraction and imaging, 10 – 100 keV
- Time resolution down to 100 ps
- X-ray source, optics, hutches built by APS
- Drivers built and operated by WSU



Two stage gun (~7 km/s)

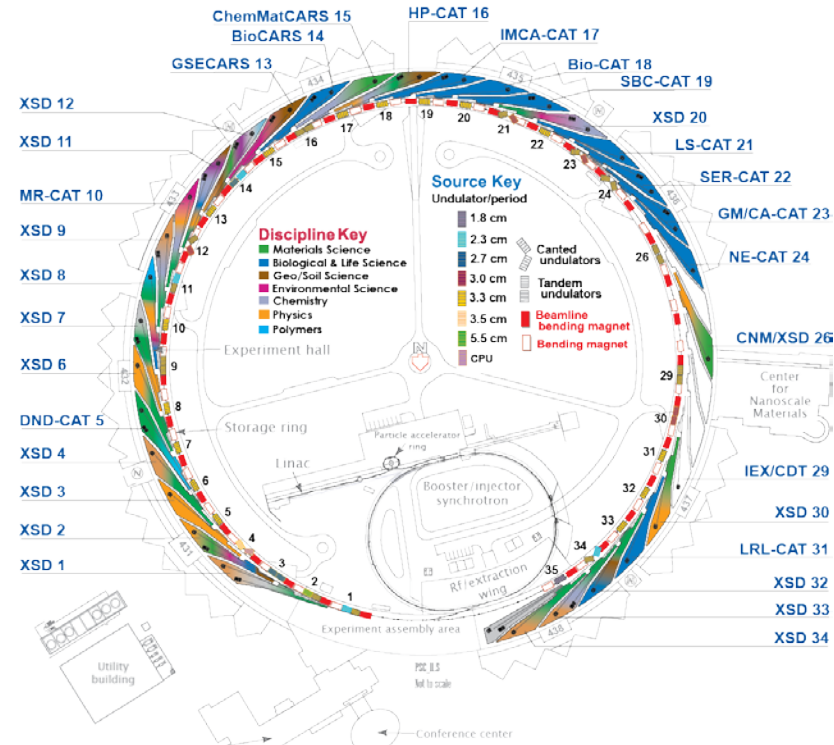


Laser Shock

Roadmap for APS Beamlines

- We are currently developing a "roadmap" for the future location of APS beamlines that includes anticipated beamlines:

	New BL	Upgr. BL
Underway	2	1
APS-U baseline	6	8
APS-U contingent	8	7
Other SAC-approved Biological Science	3	1
Other SAC-approved Physical Science	2	6
Future	1	



Current configuration: 64 BL

- Optimizing the location of all beamlines may involve moving some existing programs, and our decision process will include close consultation with all stakeholders
- We are working to help secure funding for new beamlines where needed

Roadmap Work Process Flow

