APS/Users Monthly Operations Meeting

G. Brian Stephenson

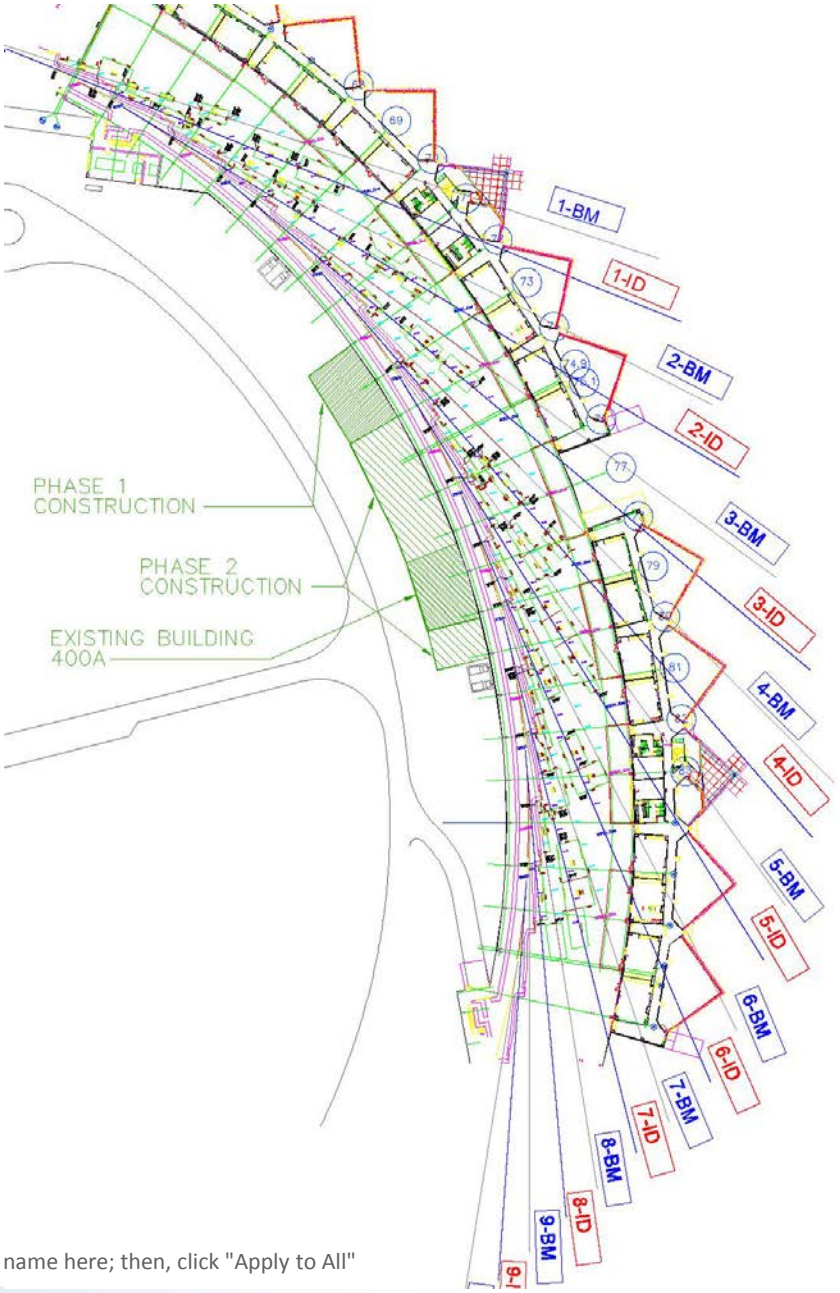
April 25, 2012

Agenda

- 2:30 p.m. Refreshments
- 2:45 p.m. APS Update – Brian Stephenson
  - Current and planned activities with potential impact on operations
- 3:05 p.m. APS Upgrade Update – George Srajer
- 3:25 p.m. User and Work-For-Other Agreements – Mark Langguth
- 3:45 p.m. Adjourn

Building 400A Project

- Building 400A is being extended to house RF and cryo plant for the Short Pulse X-ray facility.
  - Phase 1: 3/18/12 – 7/8/12
    - All foundations and slab
    - All work below finish floor
    - Completion of North section of building (steelwork, roofing, paneling, life safety etc.)
    - All other site work (driveway, etc)
  - Phase 2: 10/1/12 – 1/22/13
    - Completion of the rest of the building
    - Could start immediately if funds available

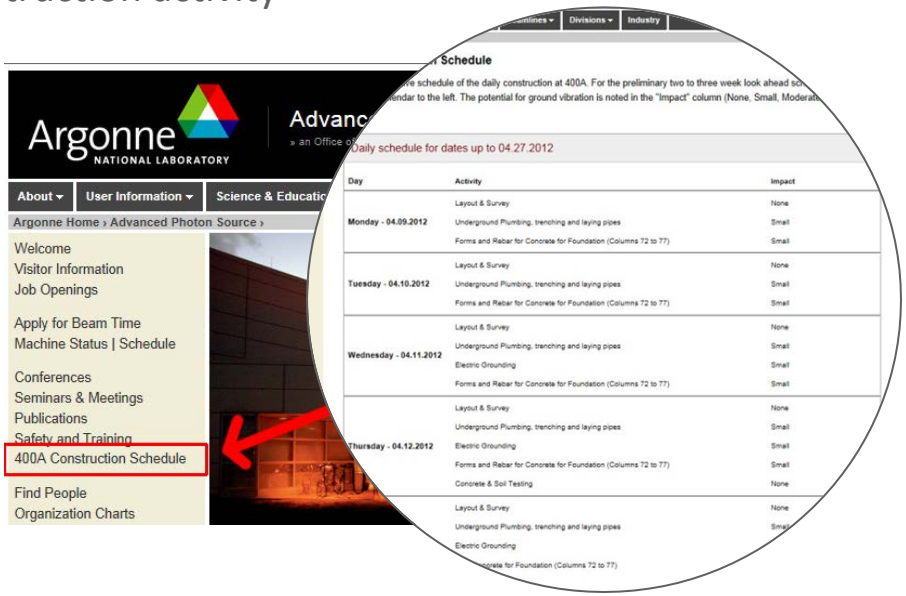


400A Construction Issues

- We underestimated the magnitude of the impact on beamlines.

Mitigating the impact from 400A

- Based on the feedback from beamlines we have taken a number of measures to minimize impact of construction activities on beamlines
  - Highest impact activities, e.g. compaction, scheduled for studies days and maintenance period
  - Protocol in place for investigating problems reported by the beamlines* allowing ALDs office to make decision on halting construction activity
  - 400A Construction schedule posted on line: Shows scheduled activities and anticipated impact
  - Beamline representative attends weekly construction meetings



*Contact your FC, Julie Cross, Mark Beno or Stefan Vogt to report problems you suspect to be caused by construction

Future Planning

- We are aware of the magnitude of problems that can be caused by construction activities located close to the APS.
- Future construction activities will be planned to reduce and minimize the impact on facility operations
- I have asked Rod Gerig to coordinate planning for all future activities that are potentially disruptive to operations
- These include:
  - APCF construction
  - LOM expansion and construction
  - Long beamline construction
  - Hutch construction
  - Installation of front ends
  - Installation of SCU0 and SCU
  - Installation of SPX0 and SPX

Advanced Protein Crystallization Facility (APCF)

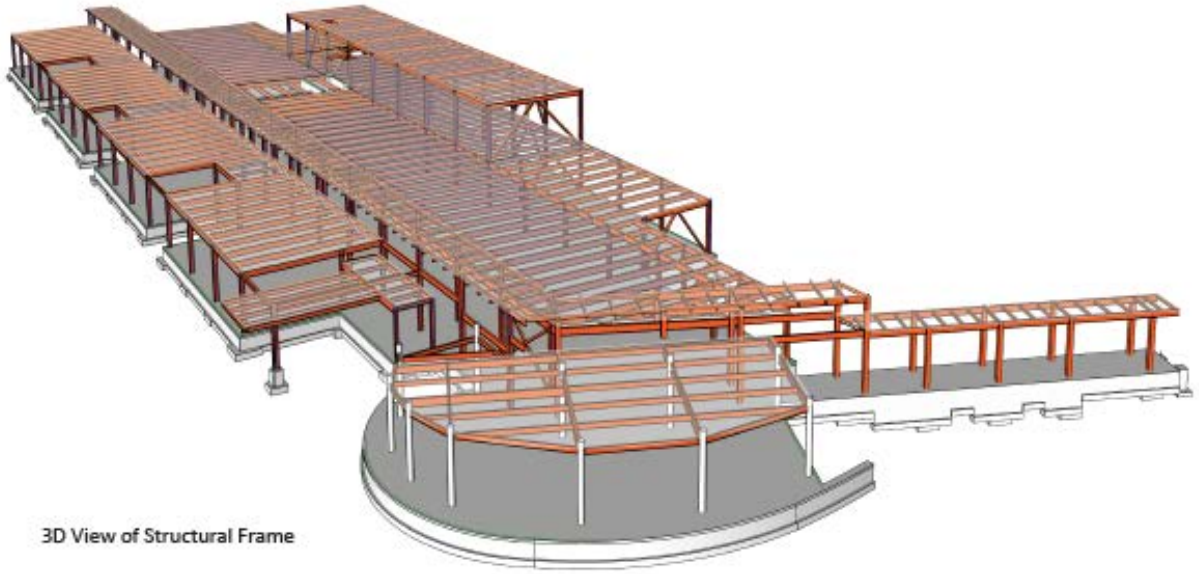
APS Operations Coordination

April 23, 2012

APCF Site Near 435 (Sectors 18-20)

APCF Primary Construction Activities

- Shallow Excavation & Grading
  - Foundation & Slab Subgrade compaction
- Concrete Foundations & Slab
- Steel Erection
- Exterior Enclosure & Roofing
- MEP Installation
- Site Work: Paving, Grading & Landscaping



3D View of Structural Frame

APCF Construction Schedule

- Start Construction: August, 2012
- LOM 435 Parking relocation: Fall, 2012
- Foundation/ Subgrade: Fall, 2012
- Steel Erection: Winter, 2012/2013
- Paving/ Final Sitework: Late Summer/ Fall, 2013

Mitigation Strategy

- **Goal**: Have zero/no impact on APS Operations
  - APCF “grew there”
- **Education**
  - APCF CSO Training: APS Operations Module
- **Planning**
  - Each piece of equipment that may have a negative impact to operations will be “surveyed” on a study day prior to use to assess impact and/ or limitations
  - If found to be an issue, work in question will be mandated for non-operation periods
  - Log will be kept of all equipment brought on site and surveyed.

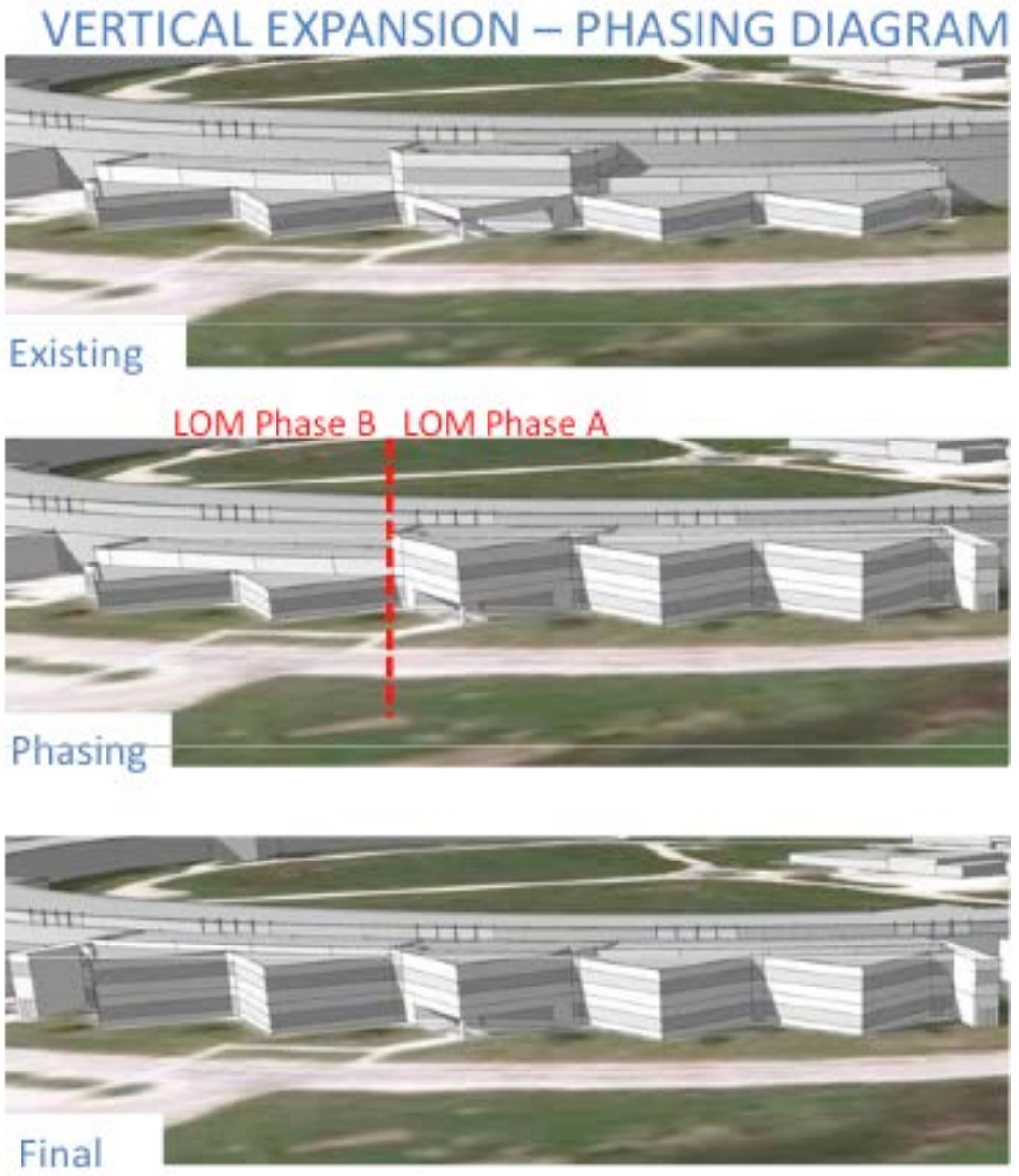
Action Items/ Next Steps

- Educating General Contractors, APCF CM
- APCF Construction Specifications Modification, APCF IPT
  - **Section 01 00 10 – Special Conditions**
    - APS Operations

      "Each piece of equipment construction equipment must be surveyed or tested prior to use to assess its potential impact on operations of the Advanced Photon Source (APS.) Equipment may only be surveyed or tested on a Tuesday of each week…."
- Documented procedures and processes for construction
- MOU: APS Operations & APCF CM Team
- Written sign-off from APS Operations Mgt.
- Vibration Equipment Survey(s) - APCF CM, APS

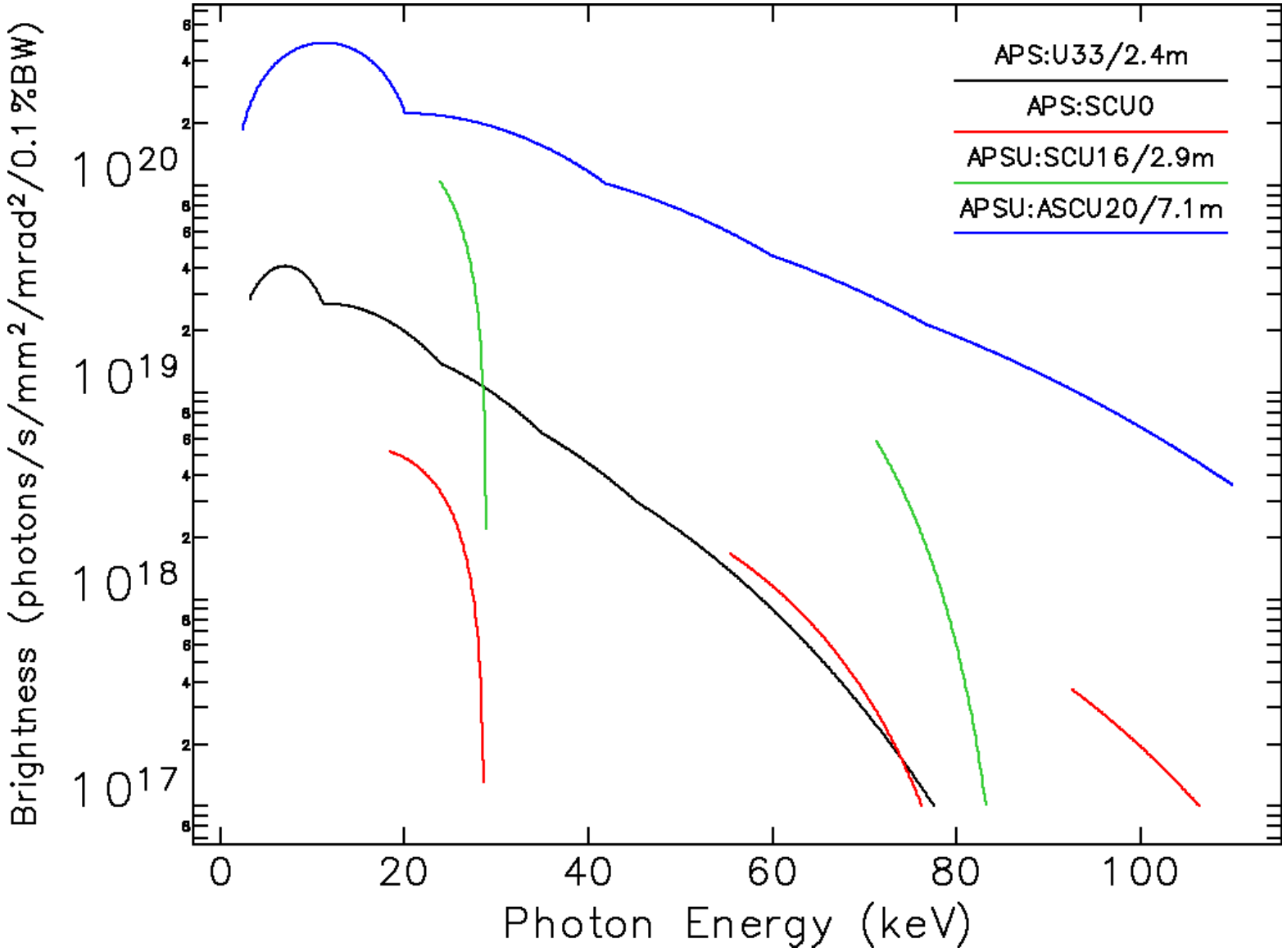
Early Planning for LOM Expansion

- Planning feasibility of adding second floor to office areas of LOMs to provide more user and beamline staff space starting in FY2013
- Likely first LOM to be expanded would be 437 (unoccupied), construction in second part of FY2013

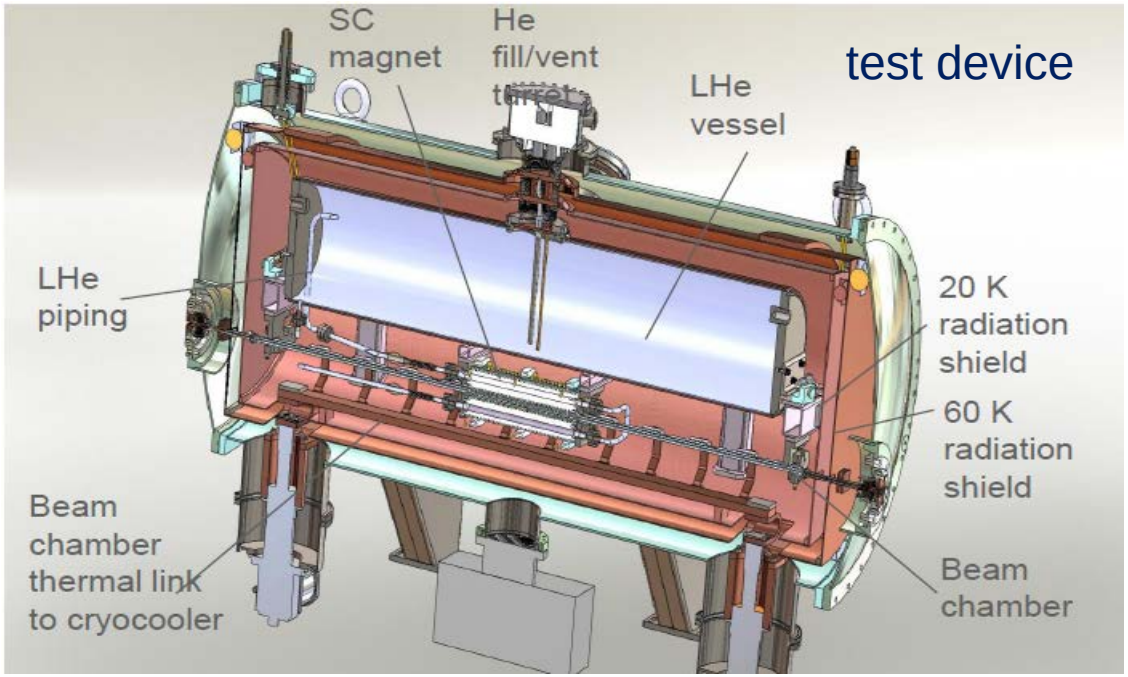


Superconducting Undulators (SCU)

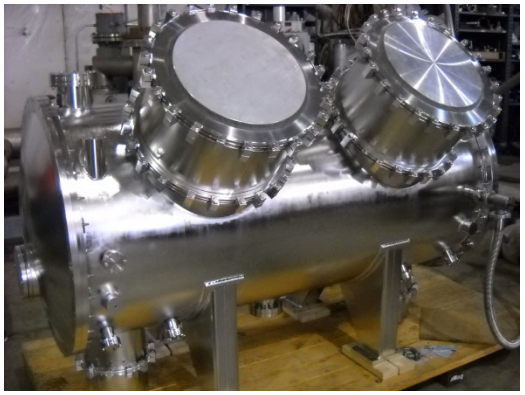
Brightness Evolution in APS-U and Beyond

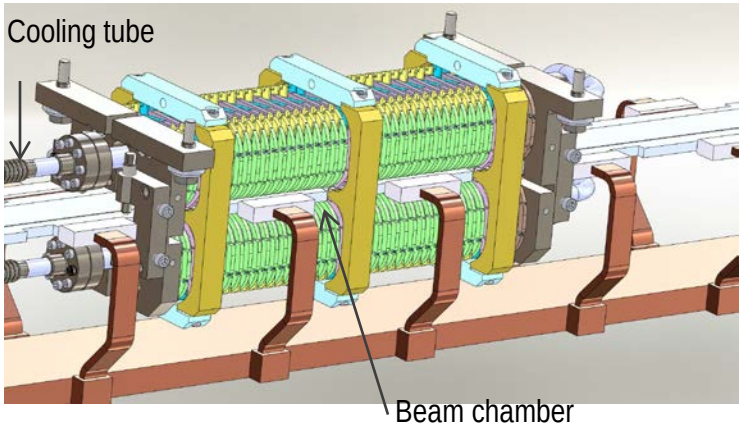


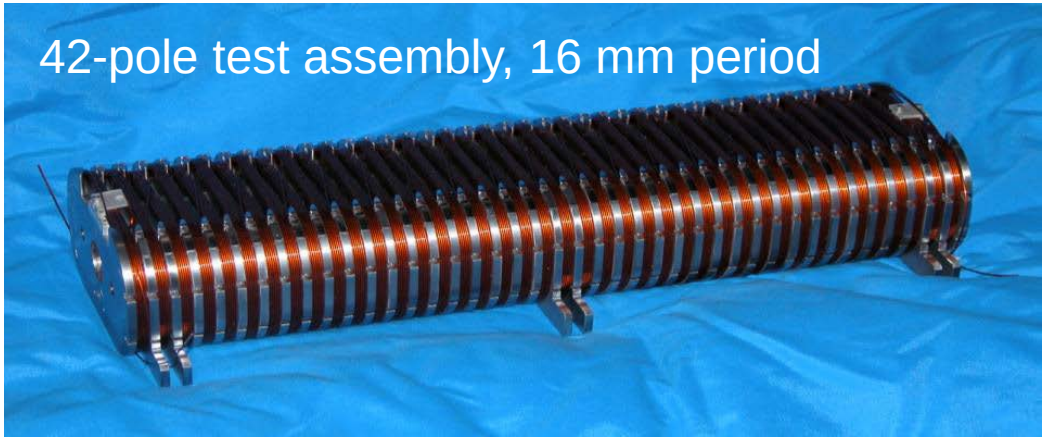
Superconducting Undulator R&D



Superconducting undulator allows to increase x-ray brightness and flux in the range of 20-100 keV.







courtesy Y. Ivanyushenkov

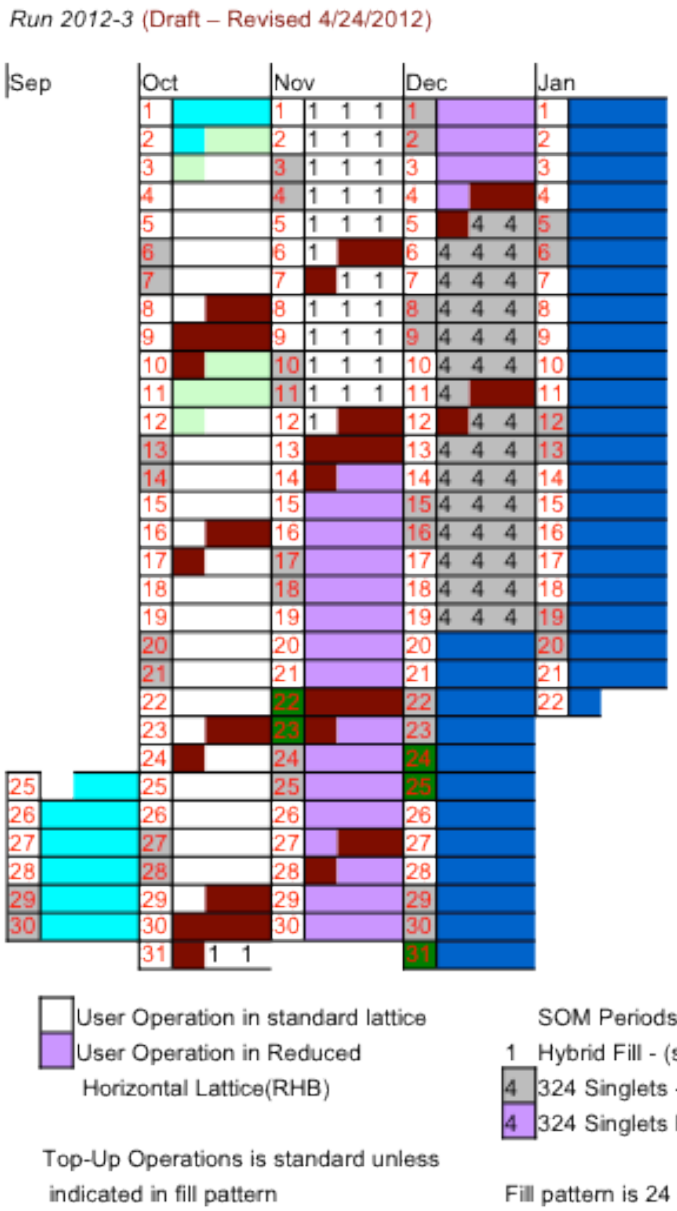
A prototype (34 cm long) superconducting undulator (SCU0) is scheduled for installation at Sector 6 in the September shutdown.

The plan is

a) During the shutdown time:
   - achieve the required vacuum
   - perform a “transparency” test (no impact on user operation when device and vacuum chamber is warm)
   - perform “photon scrubbing” of the vacuum chamber
   - cooling down vacuum chamber if all the above is completed (time permitting)

b) During the machine study days:
   - cool down vacuum chamber and achieve required vacuum
   - perform a “transparency” test (no impact on user operation with cold vacuum chamber)
   - cool down the magnet coils
   - demonstrate planned performance
   - test the impact of quenches

FY2013 APS Long-Range Operations Schedule



We have designated three days near the beginning of the Fall run as "slightly higher risk to operations" (e.g. up to 25% chance of reduced performance).

Proposed policy is to schedule such days as operations with a warning, rather than as machine studies.