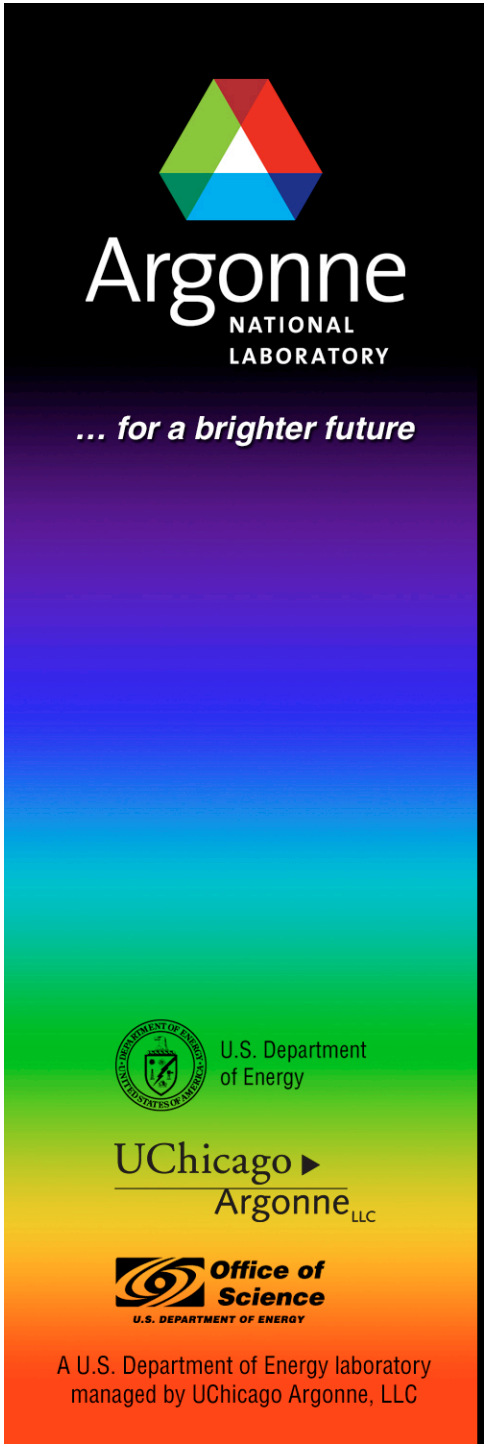

Status of Beamline Projects for the APS Renewal

Dean R. Haeffner

Advanced Photon Source
Argonne National Laboratory

Presented at the APS/Users Operations Meeting

September 23, 2009

Beamline Renewal Working Groups

Category	APS Leader	Outside Co-Leader(s)
Imaging/Coherence	Barry Lai	C. Jacobson & Mark Sutton
Extreme Conditions	Malcolm Guthrie*	Mark Rivers
Ultrafast Dynamics	Eric Dufresne	Paul Evans
Interfaces	Paul Zschack	John Budai & Dillon Fong
Spectroscopy	Steve Heald	Clem Burns
Proteins to Organisms	Stefan Vogt	J. Penner-Hahn & Malcolm Capel
Other (AA)	Dean Haeffner (for now)	

Activities

- Gather information on proposed beamline projects
  - Midterm beamline proposals (Feb. 2008)
  - Science Team Cases
  - LOIs/Scientific Proposals for new beamlines

- Refine information
  - Put into standard summary format
  - Find duplicates, assign projects to unique group
  - Eliminate costs covered by “Accelerator” and “Enabling Capabilities”
  - Update projects as needed
  - Add new projects if brought forward
  - Identify major impact requests

Summary of Requests

- 70 Submitted projects
  - All sizes from $100K to $20,000K
- Total request ~ $300M
  - CD0 budget for beamlines is $115.4M

  - Breakdown 6 areas
    - *Imaging and coherence* *$59M*
    - *Ultrafast Dynamics* *$62M*
    - *Proteins to Organisms* *$30M*
    - *Interfaces* *$54M*
    - *Extreme Conditions* *$19M*
    - *Spectroscopy* *$44M*
    - *Other* *$22.5M*

Summary of Requests

- 15 proposed new beamlines
  - 12 ID
    - *AXI Wide Field Imaging*
    - *AXI coherent diffractive imaging*
    - *Short-Pulse X-ray source*
    - *DC-CAT*
    - *BioNanoprobe*
    - *1-micron PX beamline*
    - *X-ray Interfacial Science*
    - *Intermediate energy x-ray magnetic circular dichroism*
    - *X-ray High Field Facility*
    - *High Energy Photoemmission*
    - *Nuclear and Radiological Research CAT*
    - *High Energy X-ray Mechanical Behavior of Materials*
  - 3 BM
    - *High flux quick XAFS*
    - *Dispersive XAFS/anomalous scattering*
    - *High Energy Bending Magnet*

Major Impact Requests

- Long straight sections
- Long beamlines
- Canting of straight sections
- Specialized IDs
- Special accelerator requests
- Major R&D needs

Long Straights

- Increase room for IDs, less compromised with cant
- Current thinking
  - 4 groups of 3
    - *e.g., 1, 2, 3…..11, 12, 13…..21, 22, 23…..31, 32, 33*
    - *e.g., 2, 3, 4…..12, 13, 14…..22, 23, 24…..32, 33, 34*
    - *Can have none in 36-40 (the RF area)*
  - 5 groups of 2
    - *e.g., 1, 2…..9, 10…..17, 18…..25, 26…..33, 34*

- Requests
  - Yes ➔ 11
  - Maybe ➔ 10

Long Beamlines

- Two types
  - Very long (e.g., 200 m) (AXI Wide Field Imaging)
  - Just across the aisle (X-ray Interfacial Science Phase II)

- Requests
  - Yes ➔ 3
  - Maybe ➔ 4

- Placement is complicated
  - Best spots for very long is Sectors 18-20
    - *All occupied*
  - LOMS affected, may require new office/lab space

Canted Beamlines

- 16 Request for new canted straight sections
  - 13 for existing beamlines
  - 1 (4-ID) is to modify existing minor cant
  - 2 are for new beamlines

- Strong implications on eventual operating budget

The Near Future

- Community Input Talks
  - All 6 working areas, plus miscellaneous projects

Working Group Community Input Talks

Topic	Speaker	Location	Date/Time
Ultrafast Dynamics	Eric DuFresne	401-A5000	Sept. 24 1:30 pm
Imaging and Coherence	Barry Lai	401-A1100	Sept. 25 1:30 pm
Spectroscopy	Steve Heald	401-A5000	Sept. 29 1:30 pm
Miscellaneous Renewal Beamline Projects	Dean Haeffner	401-A5000	Sept. 30 1:30 pm
Extreme Conditions	Malcolm Guthrie	433-C010	Oct. 1 10:30 am
Interfaces	Paul Zschack	401-A5000	Oct. 1 1:30 pm
Proteins to Organisms	Stefan Vogt	401-A5000	Oct. 2 1:30 pm

The Near Future

- Community Input Talks
  - All 6 working areas, plus miscellaneous projects
- Talks to the SAC
- Refine working groups to a formal WBS structure for CD1
- Organize renewal related workshops
  - Possibilities
    - *Insertion devices*
    - *Optics*
      - Including high-heat-load optics
    - *Detectors*
    - *Crosscuts on scientific areas needing clarification*