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Renewal Beamline Summary

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*Advanced Photon Source
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presented to the APS PUC/APSUO

September 16, 2009

Beamline Renewal Working Groups

<u>Category</u>	<u>APS Leader</u>	<u>Outside Co-Leader(s)</u>
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
Imaging and Coherence	Barry Lai	401-A1100	Sept. 25 1:30 pm
Extreme Conditions	Malcolm Guthrie	401-A5000	Sept. 30 1:30 pm
Ultrafast Dynamics	Eric DuFresne	401-A5000	Sept. 24 1:30 pm
Interfaces	Paul Zschack	401-A5000	Oct. 1 1:30 pm
Spectroscopy	Steve Heald	401-A5000	Sept. 29 1:30 pm
Proteins to Organisms	Stefan Vogt	401-A5000	Oct. 2 1:30 pm
Miscellaneous Renewal Beamline Projects	Dean Haeffner	431-C010	Sept. 30 10:00 am

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*