Argonne NATIONAL LABORATORY

Advanced Photon Source Upgrade Project: Call for Beamline Proposals

(revised 10/28/15)

Introduction

The Advanced Photon Source (APS) is preparing for a significant upgrade of its accelerator and beamline facilities that will dramatically improve the brightness, coherence, and stability of the storage ring x-ray beams and will provide the scientific community with a world-leading suite of new experimental tools and capabilities. Source performance will improve tremendously at all x-ray energies, but gains at high x-ray energies (>20 keV) will be particularly revolutionary. The APS Upgrade Project (APS-U) recently completed a major review of its conceptual design, and is preparing to move into the preliminary design phase.

Included in the APS-U Project is the construction of new best-in-class beamlines and significant upgrades of existing beamlines. During conceptual design, beamlines were treated as generic planning packages, as is appropriate for that stage of project planning. In order to advance the planning for the APS-U Project, it is appropriate to begin the process of defining the detailed beamline scope that will be included in the APS-U Project.

Proposals for new beamlines and major upgrades to existing APS beamlines are therefore solicited for the APS-U Project. With regards to upgrades to existing APS beamlines, we are particularly interested in those proposals that will require funding exceeding approximately $2M to implement. Note that a separate, parallel process will be initiated in the near future to define the project scope for enhancements (< $2M) to existing beamlines.

Process

The first step in this process is the submission of a white paper. White papers will be evaluated by the APS-U Project Beamline Review Committee and by APS/APS-U Project management against the criteria described below. Subsequently, submitters of white papers will be notified whether they will be asked to provide full proposals. Full proposals will only be accepted based on approved white papers.

White papers should not exceed 10 pages in length, and should include the following content:

- Cover page with title, developer(s)' name(s) and affiliation(s), and abstract (150 word limit). A principal developer must be indicated as the point of contact for the white paper, with full contact information provided. (1 page, not included in page count)
- Science case (3-4 pages)
- Beamline description (2-3 pages)
- Explicit explanation of the use of APS-U characteristics (1 page)
- Scientific community and stakeholder discussion (2 pages)
- References and CVs of proposer(s) (not included in page count)

In developing the white paper science case, developers are encouraged to draw from the "Early Science at the Upgraded Advanced Photon Source" document. This document as well as additional guidelines for white papers, submittal instructions, and other APS-U Project technical information are found on the APS-U Project "Beamline Selection" web page:

https://www1.aps.anl.gov/Beamline-Selection

Please note that the titles and abstracts, along with developer names and affiliations for all submitted white papers, will be posted for public viewing on the APS-U Project website.

While beamline estimated cost information is not expected in the content of the white paper, the beamline technical description should be of sufficient detail to allow APS-U Project staff to develop a rough cost estimate.

White Paper Review Criteria

White papers will be evaluated according to the following criteria:

- Scientific/technological/industrial impact
  - Does the proposal enable high-impact scientific, technological, or industrial research?
- Beamline quality and competiveness
  - Will the proposed beamline be "best-in-class" among worldwide facilities?
- Uniqueness and use of APS-U enhanced capabilities
  - Does the proposal make good use of the enhanced and/or unique capabilities of the APS-U?
- Predicted productivity
  - What is the potential user demand?
  - Does the proposal meet the needs of a scientific community?
  - What is the potential for high-impact publications?
- Feasibility of design and estimated cost
  - Does the proposal describe a feasible concept?

- Is there a high degree of certainty that the performance goals can be met?

Schedule

The deadline for submission of white papers is January 25, 2016. Responses to proposers and solicitations for full proposals are expected by March 15, 2016. Guidelines for the preparation of full proposals will be described in subsequent communications. Developers are encouraged to consult the aforementioned "Beamlines" web page for additional guidelines and instructions.

APS-U Project Beamline Selection Process Points of Contact

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