

eRHIC Bi-Weekly Status Report

October 30, 2017

Recent Developments:

- The Collider-Accelerator Department (C-AD) Machine Advisory Committee met on October 25 - 27, 2017. The focus of the meeting was beam cooling for RHIC and eRHIC. The presentations to the committee included updates on stochastic cooling for RHIC ion beams, low energy bunched electron beam cooling for the RHIC low-energy run, and coherent electron cooling for eRHIC. The committee's comments were quite positive and encouraging. In summary, the committee endorsed the work on various hadron cooling systems for the different use cases. In particular, they expressed their optimism that coherent electron cooling can be demonstrated in the CeC PoP Experiment.
- Follow on activities to the October 10-12, 2017 EIC Accelerator Collaboration Meeting include discussions on a strong BNL JLab collaboration on polarized electron source development and an ERL R&D program. The collaborations on polarized He3 and on superconducting IR magnets based on NbSn technology are continuing. MOUs with NSLS-II have been developed on support in various areas of electron beam dynamics and electron-beam accelerator technology. These are expected to be signed soon. A contract with SLAC is in preparation on work for coherent electron cooling using microbunching.
- The Center for Frontiers in Nuclear Science (CFNS) Seminar Series will start on November 2nd, 2017. BNL will host the seminars on the first Thursday of each month and Stony Brook University (SBU) on the third Thursday of the month at 4:00 p.m. Coffee and cookies will be served at 3:30 p.m. BNL seminars will be in the Small Seminar Room, while the Stony Brook Seminars will be held in C-133 (Gerry Brown Seminar Room) until the new seminar areas at both locations are ready. Pia Zurita and Andrey Tarasov are the conveners from BNL and Nils Feege and Christos Kallidonis are the conveners from SBU. Members of the BNL and Stony Brook staff and faculty are warmly invited and encouraged to attend all seminars. For the benefit of EIC Users not at BNL or Stony Brook, we also plan to broadcast these seminars on BlueJeans. A separate announcement will go out soon.
- A CFNS Web page is under preparation, with the above information and much more. The International Advisory Committee and a local Steering Committee are now set up. The first discussion/planning meeting is expected to take place in mid-November 2017. If you have workshop or conference proposals to be held at CFNS, please contact Abhay Deshpande.
- A meeting focused on EIC was hosted by the CTEQ collaboration in October at Fermilab. Elke Aschenauer, Abhay Deshpande, Jianwei Qiu, and Rik Yoshida spoke at the meeting about the EIC science and possible connections to CTEQ. Preliminary discussions on symbiosis between EIC and CTEQ (including needs of the HEP community for precision determinations of parton structure functions at large x) took place. A follow-up meeting to discuss more focused work and evaluation of needs and impacts is under consideration.
- An EIC User Community Detector Meeting will take place at Temple University on November 30 and December 1. The meeting will explore a wide range of issues concerning EIC detector strategies and choices and is intended to be the kick-off for a series of workshops. Information about the meeting has been distributed on the EIC Users Group Listserv.
- eRHIC pre-conceptual work is progressing with the goal of completing a draft pre-conceptual design report (pCDR) in anticipation of a pre-CDR Review on April 16-17, 2018. External reviewers have now been engaged and preparations for the review are underway.
- The next Bi-Weekly eRHIC Coffee Break will not take place this week but instead on Thursday, November 9, 2017 in the C-AD Lobby (Building 911). The coffee break days are being adjusted to the 2nd and 4th Thursdays of each month so that eRHIC team members can attend the CFNS Seminar Series.

Issues:

- The President's Budget Request (PBR) for FY2018 creates many uncertainties with significant implications on future plans and priorities. Encouraging developments are that the House budget mark for the DOE Office of Science proposes a budget that is flat with FY2017 appropriations and the Senate budget mark even advocates for a 3.0% increase. We are currently operating under a Continuing Resolution (flat funding with respect to FY2017) until December 8, 2017. Given a flat operating budget from ONP, an experimental program of 15 weeks is planned.
- An eRHIC pre-conceptual design organization needs to be finalized and communicated to relevant parties.
- Strategies will need to be developed for enlarging support for an EIC both within NP and the broader science community.
- The European strategy for particle physics process is starting and attention has to be paid regarding how to integrate EIC into it.
- The ability of the NPP Directorate to successfully manage and complete the sPHENIX project is important to demonstrating to the DOE Nuclear Physics Program that we can successfully complete mid- to large-size construction projects. We need to support a successful sPHENIX CD-1 DOE Review in FY2018.

Major Near-Term Milestones:

- | | |
|---|-------------|
| • National Academy of Sciences Study | 2017 |
| • National Academy Panel Report | Spring 2018 |
| • eRHIC Pre-Conceptual Design Report | March 2018 |
| • eRHIC Pre-Conceptual Design Review | April 2018 |
| • Ready for CD-0 Mission Need decision of EIC | June 2018 |
| • Anticipated CD-0 (Mission Need Determination) | Late 2018 |

Calendar:

- | | |
|--|--------------------------------|
| • First Center for Frontiers in Nuclear Science (CFNS) Seminar (B510) at 4:00 p.m. | November 2, 2017 |
| • eRHIC Bi-Weekly Coffee Break – 3:30 p.m. in the C-AD Lobby (B911) | November 9, 2017 |
| • EIC User Group Detector Meeting (at Temple University) | November 30 – December 1, 2017 |
| • Full day eRHIC Program Steering Group Meeting | December 11, 2017 |
| • eRHIC Pre-Conceptual Design Review | April 16-17, 2018 |

eRHIC SharePoint Site:

- Copies of these Bi-Weekly Reports and other information about eRHIC are located on the eRHIC SharePoint site <https://brookhavenlab.sharepoint.com/sites/eRHIC/SitePages/Home.aspx> . If you have trouble accessing this site, please contact Alyssa Petrone at apetrone@bnl.gov or x7735.

Link for the EIC Energy Assessment Paper (BNL Formal Report (BNL-114111-2017)):

- See <https://arxiv.org/abs/1708.01527>