From the ALD's Desk

A Monthly RHIC News Bulletin

August 2015

This is an eventful time for RHIC. As we rapidly move to complete the scientific mission of the Relativistic Heavy Ion Collider, many changes are taking place. In order to satisfy the desire of many member of the RHIC community to be more fully informed about ongoing events, we are starting a monthly bulletin that communicates notable events in a timely manner. I hope that you will find this addition to your monthly reading list useful.

RHIC Run-15: On June 22, 2015 at 8am ET, RHIC Run-15 officially came to an end. The run was extremely successful and exceeded all requested goals, achieving record integrated luminosity for polarized p+p at 200 GeV. RHIC also collided polarized protons with gold and aluminum nuclei for the first time ever anywhere in collider mode. The STAR detector operated with all its new subsystems – the heavy flavor tracker (HFT), the muon telescope detector (MTD), the forward meson spectrometer (FMS), the forward pre-shower (FPS), and the Roman pots (RP). PHENIX installed, commissioned, and took data with the new MPC-EXs, a pair of pre-shower detectors in front of the existing muon piston calorimeters (MPC). Following the completion of Run-15, C-AD hosted its annual RHIC Retreat to evaluate the recent performance of the RHIC facility and to plan for future runs (https://indico.bnl.gov/conferenceTimeTable.py?confId=1249#20150727).

DOE Site Visit to RHIC: DOE/NP staff, led by Associate Director Tim Hallman, held a one-day site visit to RHIC on July 23, 2015. The DOE Team heard presentations about the strategic goals of the RHIC program, proposed detector upgrades, ongoing eRHIC R&D, as well as the current status and future plans of STAR and PHENIX (https://indico.bnl.gov/conferenceDisplay.py?confId=1286) In his comments at the end of the day, AD Hallman emphasized that the RHIC program should plan its scientific mission under a constant effort budget scenario. He also called for the submission of an updated RHIC Spin Plan that covers all of the remaining RHIC runs (see below).

Run-16 Task Force Report: Because incidents of unplanned ion beam loss during Run-15 damaged elements of the PHENIX detector, a task force was formed and charged with evaluating the risks of a polarized p+Au run in Run-16. The completed task force report estimates the likelihood of a unplanned "pre-fire" of the beam abort system in a combined 5.5-week run at 20, 39, and 62 GeV to be approximately 3±3%. The potential for damage to the PHENIX Muon Piston Calorimeter (MPC) electronics in case of a pre-fire will be substantially reduced by the installation of a protective circuit.

Decision on Run-16 program: The 2015 PAC had assigned highest priority for RHIC Run-16 to a 10-week Au+Au run at 200 GeV, and had given next highest priority to an energy scan of either the p+Au or d+Au system (http://www0.bnl.gov/npp/docs/pac0615/Overall%20recommendations%20final%202015%20corrected%2020150709.pdf). The choice between the two latter systems was made contingent upon the completion of an appropriate risk assessment, and the p/d+Au Task Force quantified the risk of damage to the PHENIX detector of an abort system pre-fire event. Though this risk was judged to be acceptably low (see above), the critical need to keep the Coherent Electron Cooling Proof-of-Principle experiment on track, as identified by the eRHIC R&D Advisory Committee (see below), raised a difficult choice. The CeC PoP experiment requires the installation of magnetic undulators in the beam line, which reduce the aperture below what is required for a p+Au run. After consulting with all stakeholders the decision was made to plan for d+Au, rather than p+Au, running in Run-16, assuming the FY 2016 budget supports a sufficiently long run.

STAR iTPC proposal: The STAR collaboration submitted the proposal for an upgrade to the inner sectors of the TPC to BNL management. The upgrade (iTPC) would provide improved low momentum acceptance, momentum and dE/dx resolution, and extend the TPC's acceptance out to $|\eta| \leq 1.5$. The proposal has also been submitted to the NSF of China for review. The PAC commented on the proposal at its June 2015 meeting and made recommendations for further strengthening the physics case.

CSWP Site Visits: At the invitation of the two RHIC collaborations and with financial support from the ALD office, the APS Committee on the Status of Women in Physics held site visits in June 2015. The visit to the STAR Collaboration was arranged to coincide with the STAR collaboration meeting on the Stony Brook Campus; the visit to PHENIX took place during the annual RHIC Users Meeting at BNL. This was the first time that the CSWP visited international collaborations to assess the climate for women in such large organizations. Both collaborations are looking forward to the written reports from the site visits.

Charge to STAR: The STAR Collaboration was charged to submit an updated assessment of the physics opportunities for the STAR detector beyond the Beam Energy Scan II by the end of September 2015. The document will then be sent to the PAC for comments on the proposed program.

Request for an update to the RHIC Spin Plan: Nuclear Physics AD Tim Hallman requested the development of an updated RHIC Spin Plan that describes the physics opportunities for polarized proton-proton and proton-nucleus collisions at RHIC after Run-15. Elke Aschenauer (BNL) is coordinating the writing of the updated Spin Plan, and the official charge to the group is under development.

First IB meeting of the new detector collaboration: Scientists from more than 60 institutions in ten countries have expressed their interest in a new RHIC collaboration around the proposed detector for precision jet and Upsilon measurements (sPHENIX). The first Institutional Board (IB) meeting of the collaboration will be held on

Wednesday, August 26, 2015 via videoconference. John Harris (Yale) has agreed to chair the IB until elections for the spokesperson(s) of the new collaboration can be held.

sPHENIX pCDR preparation: A preliminary conceptual design report for the new detector (sPHENIX) is being developed in preparation for the sPHENIX cost and schedule review (see below). The lead editor, Brant Johnson (BNL), is aiming for completion of the pCDR by October 1, 2015. More details, including the assignments of the various pCDR sections, can be found at https://indico.bnl.gov/getFile.py/access?contribId=0&resId=0&materialId=slides&confId=1305

sPHENIX Cost and Schedule Review: A Director's Review of the estimated construction cost and schedule of the new RHIC detector (sPHENIX) has been scheduled for November 9-10, 2015 at BNL.

Generic EIC Detector R&D Advisory Committee Meeting: A meeting of the Generic EIC Detector R&D Advisory Committee was held at BNL on July 9-10, 2015 (https://wiki.bnl.gov/conferences/index.php/July_2015). The Advisory Committee meets semi-annually to review the progress of funded R&D projects. The committee also considered new proposals for FY 2016. Overall, the committee was very pleased with the progress being made by all R&D groups despite funds being tight. The committee evaluated and prioritized nine new proposals and submitted its recommendations to the Director of the Generic EIC Detector R&D Program, Thomas Ullrich (BNL).

eRHIC R&D Advisory Committee meeting: A newly established advisory committee charged with assessing the R&D program for eRHIC met on August 10-11, 2015 at BNL (https://indico.bnl.gov/conferenceDisplay.py?confId=1289). The committee, chaired by Mike Harrison (BNL) and including both BNL and outside members, focused on the question whether the proposed R&D program, if completed as scheduled, would retire the major risks of the current eRHIC design as identified by the EIC Cost Review Subcommittee of NSAC. The committee agreed with the general thrust of the proposed program, but identified some unresolved challenges and made a number of recommendations that could help increase the likelihood of success of the R&D program. The ALD will present an overview of the program and a summary of the Committee's recommendations to the BSA Science and Technology Steering Committee at its next meeting in October.