From the ALD's Desk

RHIC News Bulletin Update

May 2016

When I sent out the last edition of the RHIC Bulletin in late March, the RHIC run had just been interrupted to repair a faulty diode in one of the RHIC dipole magnets. The incident required a nineteen-day maintenance shutdown. The repair went well and Run-16 resumed as hoped with the machine performing as well as before the interruption. In fact, RHIC set a new record in April for the number physics hours in a single week (121) and is now well on its way to accomplish most of the physics goals set for Run-16.

RHIC Run-16: The 20 cryo-week Run-16 was planned to include a 10 physics weeks Au+Au run at 200 GeV and a nearly 5 physics weeks beam energy scan for the d+Au system (200, 62, 39, and 20 GeV), to be followed by a week of running a single Au beam at 40 GeV for a first test of the coherent electron cooling proof-of-principle experiment. The plan was put at risk by the diode failure in the blue RHIC ring, but the heroic efforts of the repair team allowed for a resumption of the run on April 6. Owing to unusually low power costs and some additional savings during the maintenance period we were able to extend the run by three weeks beyond its originally projected end date to make up for the loss caused by the temporary shutdown. Run-16 is now set to end on July 1.

The Au+Au, which run ended at 8 a.m. on May 9, again was characterized by record-breaking machine performance including luminosity leveling or squeezing for an optimal match to the data taking capabilities of the detectors. PHENIX exceeded the integrated luminosity goals of the beam use request by 10 percent; STAR achieved between 75 and 90 percent of the BUR goals for different event selections. The d+Au physics run will start with a one-week run at 200 GeV, followed by similarly short runs at 62, 39, and 20 GeV. The goal is to accumulate enough statistics to permit measurements of elliptic flow at all energies and triangular flow at the two highest energies.

Future RHIC Run Plans: The plan for RHIC runs before the BES-II has recently been refined to include independent runs in 2017 and 2018. The change is driven by the desire to permit a sufficiently long run with transversely polarized p+p collisions at 510 GeV in Run-17 (up to 19 cryo-weeks depending on budgetary constraints) to "test unique QCD predictions for relations between single-transverse spin phenomena in p-p scattering and those observed in deep-inelastic scattering" (NP Milestone HP13), and the plan to collide isobars (^{96}Zr+^{96}Zr and ^{96}Ru+^{96}Ru) at 200 GeV in Run-18 (13 cryo-weeks) as a critical test of the contribution from the possible Chiral Magnetic Effect to the various observed charge separation effects.

STAR iTPC Upgrade: With a short RHIC run now being planned for Spring 2018, the already tight schedule for the iTPC upgrade has become even more challenging. In spite of the additional constraint, the project team led by Flemming Videbaek expects to complete the upgrade on schedule for the planned 2019 low energy RHIC run.

sPHENIX: Good progress continues to be made on the sPHENIX Project. A team composed of members from the BNL Superconducting Magnet Division, the Collider-Accelerator Department, and the Physics Department successfully cooled down the sPHENIX magnet to 4°K and performed low-power current ramps to test the magnet integrity. The large superconducting solenoid was last used by the BaBar experiment at SLAC in 2008. A test that ramps the magnet to the full operating field of 1.5 Tesla will be performed later this year once a large steel flux return has been built around it. A beam test of new prototypes of the planned calorimeter configuration, including both electromagnetic and hadronic calorimeter components, took place at Fermilab throughout the month of April. More than 30 scientists, engineers, and technicians from ten sPHENIX collaborating institutions took part in the test. The results from this successful beam test will make it possible to retire several critical technical design issues.

LANL sponsored a workfest sponsored on the potential application of Monolithic Active Pixel Sensor technology to sPHENIX vertex detectors that took place in March. The first meeting of the newly constituted sPHENIX Executive Council took place in April, and the second sPHENIX Collaboration meeting will be held at BNL on May 18–20.

Future Opportunities: A workshop on future forward physics measurements at RHIC was held at Iowa State University in March. The BEST Topical Collaboration held its inaugural collaboration meeting at Indiana University on May 9-11.

RHIC/AGS PAC: The 2016 PAC meeting is scheduled for June 16-17, 2016. Additional information can be found at the PAC website: https://www.bnl.gov/npp/pac.php

RHIC Computing Facility: Michael Ernst has retired as Director of the RHIC & ATLAS Computing Facility (RACF) after nearly a decade at its helm. During his tenure the RACF has become the leading computing center in the U.S. focused on the storage and management of very large data sets from scientific facilities, and one of the leading such centers in the world. Eric Lançon, formerly ATLAS Computing Coordinator at CERN and coming to BNL from Saclay, has taken over as RACF Director effective May 2016.

eRHIC Planning: The eRHIC R&D Advisory Committee held its third meeting on April 7-8, 2016. The committee, chaired by Mike Harrison (BNL) and including both BNL and outside members, provided an assessment of the progress of the ongoing efforts aimed at developing a lower risk eRHIC design option. Following advice from the Committee, two design teams were charged to develop low-risk versions of the ring-ring and linac-ring options, respectively, by late 2017.

EIC Users Group: The next meeting of the EIC Users Group will be held at Argonne

National Lab on July 7-9, 2016. For more information, visit http://www.eicug.org.

NAS Study of EIC: The National Academy has formally accepted the charge to conduct an assessment of the scientific justification for a U.S. domestic electron-ion collider facility, taking into account current international plans and existing domestic facility infrastructure. The NAS panel has been asked to address the role that such a facility could play in the future of nuclear physics, considering the field broadly, but placing emphasis on its potential scientific impact on quantum chromodynamics. The study is expected to conclude in approximately 18 months.