Memorandum of Agreement between the BNL Physics Department and the sPHENIX Project on the Physics Department Support for the sPHENIX Upgrade

A. Purpose

The purpose of this Memorandum of Agreement (MoA) is to establish an agreement between the BNL Physics Department and the sPHENIX Project on the support that will be provided by the BNL Physics Department to the sPHENIX Project for the completion of the sPHENIX Upgrade. For the Purpose of this document the sPHENIX Upgrade is defined as the sPHENIX MIE and the Building 1008 (B1008) Infrastructure and Facility Upgrade.

B. Responsibilities

The BNL Physics Department will provide sufficient funding to support at a minimum the personnel shown in Table 1 for the period of performance of the MoA. Many activities associated with preparing sPHENIX to take data are not captured in the Resource Loaded Schedule for the sPHENIX Upgrade but never the less will need to be supported if sPHENIX is to obtain its Ultimate Performance Parameters and deliver on its scientific mission. The resources necessary to transition sPHENIX from its KPPs to UPPs will be captured in future documents including the Transition to Operations plan. The funding for the labor working on both the MIE and Infrastructure and Facility Upgrade will receive the BNL extraordinary project rate.

PO sPHENIX group by FTEs (Job Category)	FY19	FY20	FY21	FY22
SCI (S)	5	5	5	2
Prof (P&I)	10.5	10.5	10.5	3
Admin and Tech (A&T)	11	11	11	6
Total	26.5	26.5	26.5	11

Table 1: sPHENIX Project FTEs/FY by Job Category. Note that FY22 is a transition year spanning the end of the MIE, the final year of installation and the preparation for the start of the first sPHENIX run.

The sPHENIX Upgrade WBS Level-2 and Level-3 responsibilities assigned to members of the Physics Department are in the list below. Note that some of the summary tasks listed have underlying activities that are the responsibility of other BNL Departments or Divisions. One example is the engineers from the BNL Instrumentation Division are responsible for the engineering design of aspects of the TPC Front End Electronics System and the firmware for the TPC Data Aggregator Module. There are a number of other examples of specific activities underneath the summary task being assigned to members of other BNL Departments. The details of the resources assigned to individual activities are described in the sPHENIX Resource Loaded Schedule.

- Project Management of the sPHENIX MIE
- Project Management of the B1008 Infrastructure and Facility Upgrade
- Design, Prototyping, Production, Testing and Commissioning of the TPC Front End electronics
- Design, Prototyping, Production, Testing and Commissioning of the TPC Data Aggregator Modules
- Design, Prototyping, Production, Testing and Commissioning of the TPC Gas, Laser Calibration and Cooling systems.
- Design of the EMCal Blocks
- Design, Prototyping, Production, Testing and Commissioning of the EMCal Modules
- Design, Prototyping, Production, Testing and Commissioning of the EMCal Sectors
- Design and Production of the Inner HCal Frame
- Design, Prototyping, Production, Testing and Commissioning of the Outer HCal Detector
- Design, Prototyping, and Production of the Outer HCal scintillating tiles
- Design, Prototyping, and Production of the of the SiPM daughter cards
- Design, Prototyping, Production, Testing and Commissioning of the EMCal Front End electronics
- Design, Prototyping, Production, Testing and Commissioning of the HCal Front End electronics
- Management of the Calorimeter Digitizer Modules
- Management of the DAQ/Trigger
- Design, Prototyping, Production, Testing and Commissioning of the Global Level-1 Trigger
- Design, Prototyping, Production, Testing and Commissioning of the Timing System
- Design, Prototyping, Production, Testing and Commissioning of the Minimum Bias Detector
- System Integration of sPHENIX
- ES&H of sPHENIX
- Mapping of the SC-Magnet
- Installation of all sPHENIX components including the INTT and the MVTX with the exception of certain SC-Magnet components
- Management of the sPHENIX Infrastructure
- Design, installation and testing of all sPHENIX detector-support Infrastructure.

In addition to providing the funding to support sPHENIX project personnel, the physics department agrees to provide office space and lab space in Building 510 to personnel working on the sPHENIX Project through the duration of this agreement. The Physics Department will also make available 2000 sq. ft in the Building 510 High Bay for the sPHENIX EMCal module and sector assembly, testing and installation preparation.

The activities supported by this agreement include the design, prototyping, production, testing, installation and commissioning of the sPHENIX detector, the B1008 Infrastructure and Facility upgrade. The MoA covers the support the sPHENIX Project will receive from the Physics Department according to the current plan. The level of support can be increased in the out-years as budgets allow and circumstances evolve.

C. General Provisions

Modifications to this MoA

Modifications within the scope of this MoA will be made by mutual consent of the parties and by issuance of a written modification, signed and dated by all parties, prior to any changes being performed. The MoA will be updated as whenever significant revisions to this document are required.

Period of Performance of this MoA

The MoA will become effective upon the date of signatures of all the parties. The MoA is terminated upon the completion of the sPHENIX Upgrade.

Signatures:

5/22/2018

Berndt Mueller, Associate Lab Director for BNL Nuclear and Particle Physics Date

5/22/2018

Hong Ma, Chair of the BNL Physics Department Date

5/22/2018

James Dunlop, Associate Chair of the BNL Physics Department Date

5/22/18

Edward O'Brien, sPHENIX Project Director Date