



Haiyan Gao
Building 510F
P.O. Box 5000
Upton, NY 11973-5000
Phone 631 344-2431
Fax 631 344-5820
hgao@bnl.gov

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www.bnl.gov

**Associate Laboratory Director's Cost & Schedule Review
of the sPHENIX MIE
July 14-15, 2021
Charge to the Review Committee**

Thank you for agreeing to participate as a panel member in the Annual Progress Review of the sPHENIX Major Item of Equipment (MIE) that will take place remotely.

The sPHENIX MIE is a major upgrade to the PHENIX experiment that will enable precision characterization of jets produced in nucleus+nucleus (AA), proton+nucleus (pA) and proton+proton (pp) collisions at the Relativistic Heavy Ion Collider (RHIC) located at BNL prior to the construction of the Electron Ion Collider (EIC).

The sPHENIX MIE received PD-2 (similar to CD-2 Approve Performance Baseline) and PD-3 (similar to CD-3 Approve Start of Construction) in May 2019, for a total project cost of \$27M. The MIE includes project management, an outer tracking system with associated electronics, an electromagnetic and hadronic calorimeter with electronics, a data acquisition and trigger system plus a minimum bias detector.

The committee is charged to evaluate and comment on any relevant aspects of the sPHENIX project. In particular, the purpose of this review is to assess all aspects of the project's plans – technical, cost, schedule, management, and environment, safety, and health (ES&H). The following main topics will be considered at the review:

1. Project scope: Is the project executing its technical baseline in a manner to deliver the science? Is the fabrication progress appropriate for this stage of the project? Are all interfaces properly understood?
2. Cost and Schedule: Will the project's remaining cost and schedule resources be sufficient to achieve PD-4? Is contingency usage appropriate for this stage of the project? Is the project critical path clearly identified and understood?
3. Management: Is the project being properly managed at this stage? Are the risks properly identified and managed and are appropriate mitigation strategies in place? Are the procurements being properly managed?
4. Environment, Safety & Health and Quality Assurance (ES&H/QA): Are the ES&H/QA requirements being properly addressed given the project's current stage of development?
5. Preparation for installation: Is the hand off to installation properly planned? Are the tests of equipment and interfaces properly understood?
6. COVID-19: Are the cost/schedule impacts from COVID-19 on the sPHENIX MIE cost and schedule understood and being properly assessed and managed?
7. Recommendations: Has the project responded appropriately to previous review recommendations?

The review will take place from July 14-15, 2021, remotely. A closeout will be presented to the sPHENIX project team, and the Laboratory prior to adjourning. A report should be submitted to my office by close of business on July 30, 2021.

I very much appreciate your willingness to lend your time and expertise to this important step in the sPHENIX review process and look forward to receiving your assessment.

Sincerely,

A handwritten signature in blue ink, appearing to read "Haiyan Gao", is centered on the page. The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Haiyan Gao
Associate Laboratory Director for Nuclear and Particle Physics