

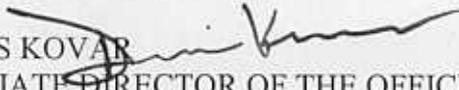


Department of Energy

Office of Science
Washington, DC 20585

August 4, 2004

MEMORANDUM FOR: RAYMOND L. ORBACH
DIRECTOR
OFFICE OF SCIENCE

FROM: DENNIS KOVAR 
ASSOCIATE DIRECTOR OF THE OFFICE OF SCIENCE
FOR NUCLEAR PHYSICS

SUBJECT: ACTION: Sign the memorandum of understanding (MOU) that establishes the roles and responsibilities of the Department of Energy (DOE) and the National Science Foundation (NSF) with respect to the construction, operation and life-cycle costs of the Rare Symmetry Violating Processes (RSVP) project at Brookhaven National Laboratory (BNL).

ISSUE: The RSVP project is an undertaking of NSF, but it requires DOE to modify the Alternating Gradient Synchrotron (AGS) within the Relativistic Heavy Ion Collider (RHIC) Complex at BNL in order to provide a proton beam.

BACKGROUND: The scientific purpose of the RSVP project is to investigate the fundamental interactions of elementary particles. At the present time, there are two experiments within RSVP. The KOPIO experiment will measure the rare decay of a neutral kaon (K^0) into a neutral pion (π^0), neutrino and an antineutrino in order to determine one of the fundamental parameters of charge-parity violation in the quark sector. MECO (Muon to Electron Conversion in the nuclear Coulomb field) will search for a process that is normally forbidden by conservation of lepton number in the Standard Model, but one that is expected to occur in models of new physics beyond the Standard Model.

The RSVP experiments were proposed to, and reviewed by, NSF. Subsequently, the RSVP experiments have been approved by the National Science Board for inclusion in a budget request.

The DOE Office of Science has the responsibility for the operation of the RHIC complex which is needed to carry out its DOE mission. DOE will make available beams and the use of BNL facilities and staff, as appropriate, for the NSF-sponsored RSVP project in a manner that does not



compromise DOE's primary mission and signed agreements with other agencies that utilize the RHIC complex.

NSF will be responsible for the construction costs and life-cycle costs of the RSVP project, including the incremental costs for the operation, maintenance, waste disposal, and final disposition costs. DOE will provide oversight of the modifications to the AGS and support to the RSVP management team via the local site office. The Office of High Energy Physics (HEP) within DOE Office of Science will support the RSVP Research Program through peer reviewed base-program scientific participation subject to priorities and availability of funds.

Both agencies, through the MOU, agree to the goal of successful implementation of the RSVP project with no negative impact on current research activities at the RHIC complex at BNL.

SENSITIVITIES: None

POLICY IMPACT: This action does not impact Department policy.

RECOMMENDATION: The Director sign the attached memorandum of understanding

ATTACHMENT:

Memorandum of Understanding signed on July 22, 2004, by Michael S. Turner, Assistant Director, Mathematical and Physical Sciences, National Science Foundation



*U.S. Department of Energy
and the
National Science Foundation*



Memorandum of Understanding

**Between the
National Science Foundation**

**And the
Department of Energy**

**Regarding the
Rare Symmetry Violating Processes (RSVP) Project**

**at the
Brookhaven National Laboratory**

July 2004

1. Introduction

The purpose of this Memorandum of Understanding (MOU) is to establish the roles and responsibilities of the National Science Foundation (NSF) and the Department of Energy (DOE) with respect to the construction, operation and life-cycle costs of the Rare Symmetry Violating Processes (RSVP) project. The RSVP project is an undertaking of the NSF, but it requires DOE participation to provide a proton beam from its Alternating Gradient Synchrotron (AGS) facility situated at the Brookhaven National Laboratory (BNL).

Both agencies, through this MOU, agree to the goal of successful implementation of the RSVP project with no negative impact on current research activities at the Relativistic Heavy Ion Collider (RHIC) complex at BNL.

2. Agency Authorities

- 2.1 The NSF is acting pursuant to the National Science Foundation Act of 1950 as amended, and 42 U.S.C. §1861 et seq.
- 2.2 DOE is acting pursuant to authorities conferred in the Department of Energy Organization Act, 42 U.S.C. §7101, et seq., (42 U.S.C. § 7151), the Atomic Energy Act of 1954, 42 U.S.C. §2011 et seq., including, but not limited to, 42 U.S.C. §2051.
- 2.3 These authorizations for the two agencies, together with the internal policies and procedures of each agency, define the authority of the two agencies to establish and manage their respective programs.
- 2.4 The authorities that the two agencies bring to the execution and integration of RSVP into the BNL program are those which they have independently as program offices within their respective agencies.
- 2.5 In the implementation of the agencies' decisions and resultant actions, each will follow the policies and procedures of their respective agencies.

3. RSVP Project Description

The scientific purpose of the RSVP project is to investigate the fundamental interactions of elementary particles. At the present time, there are two experiments within RSVP, both at the sensitivity frontier. The KOPIO experiment will measure the rare decay of a neutral kaon (K^0) into a neutral pion (π^0), neutrino and an antineutrino in order to determine one of the fundamental parameters of charge-parity violation in the quark sector. MECO (Muon to Electron Conversion in the nuclear Coulomb field) will search for a process that is normally forbidden by conservation of lepton number in the Standard Model,

but one that is expected to occur in models of new physics beyond the Standard Model.

The RSVP experiments were proposed to, and reviewed by, the NSF. Subsequently, the RSVP experiments have been approved by the National Science Board for inclusion in a budget request.

To achieve realization of the RSVP project, NSF requires delivery of beam from the AGS and siting of the experiments in the AGS experimental hall area in the RHIC complex at BNL. DOE operates the RHIC complex of accelerators essential to RSVP.

4. Scope

The RSVP project and its management will be defined by a Project Management Plan (PMP) to be proposed by the RSVP Project Director and approved by the Joint Oversight Group (See Section 7). A Deputy Project Director, based at BNL and reporting to the project director and interfacing with BNL management through processes agreed upon by both, will be proposed by the RSVP Project Director and approved by NSF and DOE. In general terms, the RSVP project will include the following:

- 4.1 The RSVP project will consist of the experimental equipment for KOPIO and MECO, including the muon beamline for MECO. This equipment will not be permanently located at the AGS. The NSF Division of Physics will be responsible for oversight of the management, construction and commissioning. All work that is performed by non-DOE contractor personnel at the AGS (a DOE-approved User Facility) will be defined in a forthcoming Memorandum of Understanding for AGS experimental work.
- 4.2 The RSVP project will also include permanent modifications to the AGS, to its extraction system and to the proton beam lines needed for the two RSVP experiments. The Department of Energy through its Federal Project Director will provide oversight of the modifications to this DOE asset.
- 4.3 The PMP will identify DOE's & NSF's oversight and management responsibilities in more detail.

5. Financial Responsibilities

- 5.1 This MOU will not impose any financial responsibilities on the DOE. The NSF will be responsible for the costs it incurs in its own interest related to the support of this MOU.

- 5.2 Funding for the construction and commissioning of the RSVP project will be through the NSF's Major Research Equipment and Facilities Construction (MREFC) budget.
- 5.3 The NSF will be responsible for the life-cycle costs of the RSVP project, including the incremental costs for the operation, maintenance, waste disposal, and final disposition costs. Operational costs will include the costs of running the RHIC complex to perform the RSVP research program. The cost to decommission, decontaminate, and deconstruct this project will be assessed in yearly amounts over the length of the planned operation, with funds placed in a suitable escrow account. Any remaining funds that become available after completion of the decommissioning, decontamination, and deconstruction of the RSVP project will be used in accordance with the instructions of the NSF.
- 5.4 The NSF will provide the necessary Research & Development and Engineering Design funding.
- 5.5 The NSF will pay the costs associated with all the National Environmental Policy Act (NEPA) requirements for the RSVP project.
- 5.6 The NSF will pay the costs incurred by the Brookhaven Area Office to fulfill their responsibilities in their oversight of the project construction and for the environmental health and safety of the project.
- 5.7 Implementation of this MOU by DOE and NSF is subject to the requirements of the Anti-Deficiency Act, 31 U.S.C. Sec. 1512, et seq., and the availability of appropriated funds. Any requirement for the payment or obligation of funds by NSF established by the terms of this MOU shall be subject to the availability of appropriated funds. The Parties acknowledge that NSF will not be required under this MOU to expend appropriated funds unless and until an authorized officer of that agency acts to commit to such expenditures as evidenced in writing. This MOU does not transfer funds.

6. Agency Roles and Responsibilities

6.1 The National Science Foundation

- 6.1.1. The Division of Physics within the NSF Directorate of Mathematical and Physical Sciences (MPS) at NSF has final agency management responsibility for the RSVP project. The NSF Division of Physics will also support the RSVP Research Program through base-program scientific participation.

- 6.1.2. The NSF Division of Physics will be responsible for the oversight of the management, construction and commissioning of the RSVP project, as described in the RSVP Project Management Plan following its approval.
- 6.1.3. The NSF Division of Physics will work with DOE to ensure that the construction, commissioning, and final disposition of the RSVP project will not unfavorably impact current research activities at the RHIC complex at BNL as determined by DOE.
- 6.1.4. The NSF awardee institutions will retain title to the equipment procured within the scope of work referenced under the RSVP project.
- 6.1.5. The RSVP Project Director, with BNL management's assistance, will provide NSF and DOE with the following minimum documentation for the execution of the RSVP experiments:
 - (a) An RSVP Project Management Plan.
 - (b) A plan for preparing and securing timely approval of the required appropriate NEPA documentation.
 - (c) A description of NSF's beam requirements and a plan for modifying the AGS extraction system and beam lines that meets NSF's beam requirements;
 - (d) A construction schedule that is consistent with NSF's defined funding profile;
 - (e) An estimate of the AGS incremental operating costs;
 - (f) An estimate of the incremental decontamination and decommissioning costs.

6.2 The Department of Energy

- 6.2.1. DOE Office of Science has the responsibility for the operation of the RHIC complex which is needed to carry out its DOE mission.
- 6.2.2. DOE will make available beams and the use of BNL facilities and staff, as appropriate, for the NSF-sponsored RSVP project in a manner that does not compromise DOE's primary mission and signed agreements with other agencies that utilize the RHIC complex (e.g., the NASA Space Radiation Laboratory).
- 6.2.3. DOE will provide oversight of the modifications to the AGS and support to the RSVP management team via the local site office and in particular, the DOE Federal Project Director. All necessary DOE project documents will be created by the RSVP Project Director under the guidance of DOE and NSF.

- 6.2.4. The Office of High Energy Physics (HEP) within DOE Office of Science will support the RSVP Research Program through peer reviewed base-program scientific participation, including the participation of University and Laboratory Scientists, subject to priorities and availability of funds.

7. Oversight and Coordination

- 7.1 An integrated Joint Oversight Group (JOG), consisting of representatives from the NSF and DOE, will be formed. The JOG will concur on all necessary MOU's among RSVP partners. The JOG will also provide programmatic guidance and direction to the RSVP project, while NSF is responsible for day-to-day oversight (5.1.2), and will meet at least quarterly to evaluate the status of the project and to provide policy actions as necessary and appropriate to ensure the successful completion of the goals of the project.
- 7.2 A Laboratory Oversight Group, consisting of experts and chaired by the BNL Associate Laboratory Director for High Energy and Nuclear Physics, will be formed to provide general support to the RSVP Project Director to ensure successful implementation of the project and provide project reviews upon request.
- 7.3 The NSF Division of Physics, with DOE concurrence, will establish an integrated project management team. The team will facilitate the interactions of the RSVP Project Office with BNL. The team will include members of the DOE Area Office and BNL who are knowledgeable of the interfacing requirements of the RSVP project and AGS facility. The team will also include the KOPIO, MECO and AGS Project Managers.
- 7.4 BNL is designated as the host laboratory. Through the Associate Laboratory Director for High Energy and Nuclear Physics, the laboratory, with the concurrence of the Project Director, and through processes defined in the Project Management Plan, will take responsibility for the overall on-site integration function for the project, as well as additional laboratory-project connections, and will take all reasonable actions to ensure success of the project goals.
- 7.5 The NSF Division of Physics will perform annual reviews of the RSVP project designed to assess project performance.
- 7.6 The NSF Division of Physics will be informed of the parameters of any relevant DOE review and be invited to attend as observers.

- 7.7 DOE Office of Nuclear Physics and Office of High Energy Physics will be informed of the parameters of any relevant NSF review and be invited to attend as observers.

8. Miscellaneous

The NSF and DOE agree that any requests for information received under the Freedom of Information Act (FOIA) shall be processed in accordance with the receiving agency's FOIA regulations; however, the receiving agency agrees to consult the other agency prior to the release or denial of any information requested under the FOIA. The NSF and DOE also agree that prior to the release of any significant information regarding this MOU, or RSVP experiments conducted by or at DOE laboratories or facilities, such as a statement to the press, they shall consult together regarding the content of such a release.

9. Amendments, Disputes, Approvals, Duration and Termination

- 9.1 This MOU becomes effective on the date of the last signature and remains effective for a period of ten (10) years unless renewed by the Approval signatories or their successors.
- 9.2 The Approval signatories or their successors in office shall resolve all disputes or unresolved items or issues covered by this MOU. Additionally, the Parties to this MOU recognize that there may be minor inconsistencies or conflicts between DOE regulations and Prime Contracts governing activities at DOE laboratories and facilities and NSF regulations and Prime Awards to NSF grant recipients involved in the RSVP research project. The Parties to this MOU believe the value of the work to be accomplished under this MOU exceeds any risk associated with any potential minor inconsistency or conflict of terms and conditions between DOE and NSF documents. DOE and NSF, through their respective DOE contractor or NSF grantee, agree to exert their best efforts to identify and avoid situations where these inconsistencies or conflicts might arise. Should an inconsistency or conflict arise, the Parties to this MOU agree to informally resolve the inconsistency or conflict at the participant level within their respective agencies, using Federal law and regulation as necessary. If an informal resolution is not possible at the participant level, the Approval Signatories to this MOU, or their successors in office, shall be so advised and they shall take the appropriate actions to resolve the inconsistency or conflict.
- 9.3 This MOU between Divisions of NSF and Offices of DOE, as specified above, is made by the signatories below and can be modified as required by the mutual consent of the same signatories or their successors. Either the Director of the Office of Science at DOE or the Assistant Director of

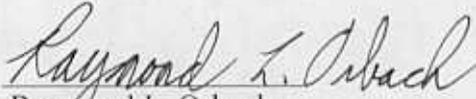
Mathematical and Physical Sciences at NSF may terminate this MOU upon presentation of ninety (90) days written advance notice to the other, or by the agreement in writing of both Parties.

Signatories

Approved by:



Michael S. Turner
*Assistant Director,
Mathematical and Physical Sciences
National Science Foundation*



Raymond L. Orbach
*Director
Office of Science
Department of Energy*

Date:

7/24/04

Date:

AUG 12 2004

compromise DOE's primary mission and signed agreements with other agencies that utilize the RHIC complex.

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Both agencies, through the MOU, agree to the goal of successful implementation of the RSVP project with no negative impact on current research activities at the RHIC complex at BNL.

SENSITIVITIES: None

POLICY IMPACT: This action does not impact Department policy.

RECOMMENDATION: The Director sign the attached memorandum of understanding

ATTACHMENT:
Memorandum of Understanding signed on July 22, 2004, by Michael S. Turner, Assistant Director, Mathematical and Physical Sciences, National Science Foundation

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SC-93 Hawkins /04	SC-93 <i>JSG</i> Simon-Gillo 7/27/04	SC-92 <i>G. Rai</i> Rai 7/26/04	SC-92 <i>EAH</i> Henry 7/27/04	SC-90 <i>JK</i> Kovar 7/29/04	SC-20 <i>AJW</i> Byon 7/29/04
SC-20 <i>ABW</i> Staffin 7/30/04	SC-80 <i>DL</i> Lehman 7/30/04	SC-63 <i>DL</i> DeLorenzo 8/2/04	SC-4 <i>Bhal</i> Weakley 2/11/04	SC-4 Salmon /04	SC-3 <i>ADJ</i> Johnson 8/11/04
SC-2 <i>JD</i> Decker 8/11/04					