

Memorandum of Understanding
Between
THE INSTITUTE FOR BASIC SCIENCE
and
FERMI RESEARCH ALLIANCE, LLC
For Cooperation in the Area of
High-Energy Physics and Related Fields

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The Institute for Basic Science (IBS) within the Ministry of Education, Science and Technology (MEST) of the Republic of Korea and Fermi Research Alliance, LLC, operator of Fermi National Accelerator Laboratory (Fermilab) operating under the United States Department of Energy (DOE) Contract No. DE-AC02-07CH11359, hereinafter referred to as the "Participants":

DESIRING to establish a framework for cooperation in accelerator research and related applications between the IBS and Fermilab,

State their understanding as follows:

Section 1 – Objective

- A. The objective of this Memorandum of Understanding (MOU) is to facilitate scientific and technological exchanges that promote cooperation on research and development for projects involving the next generation of accelerators and related science and technologies. Some of the potential areas for cooperation are identified in Section 3.
- B. The IBS plans to construct a Rare Isotope Accelerator (Rare Isotope Science Project, RISP) for nuclear physics, and medical and material science and applications. The immediate IBS objective is to develop technical expertise and industrial capabilities to support the construction of this accelerator.
- C. Fermilab plans to construct a multi-MW proton source, Project X, as the key element for Fermilab's strategy for particle physics and future development of the accelerator complex, to support the Fermilab mission. The objective of Fermilab is to develop the technology for Project X.

Section 2 – Forms of Cooperation

Cooperative activities undertaken pursuant to this MOU may include, but are not limited to, the following:

A. Exchange of Personnel

To facilitate the activities listed in Section 3 as well as other related activities, the Participants intend to:

1. Exchange scientists, engineers, post-graduates and graduate students on short-term or long-term basis.
2. Establish a collaboration center at Fermilab to facilitate the exchange of personnel between the Republic of Korea and the United States.

B. Exchange of Technical Information and Experiences, and Collaborative Visits.

Section 3 – Areas for Cooperation

Cooperation under this MOU may include, but is not limited to, the following areas:

- a. Proton Source
- b. Radio Frequency Quadrupole
- c. Medium Energy Beam Transport
- d. Superconducting Cavities
- e. Superconducting Test Facilities
- f. Superconducting Magnets
- g. Solid State Radio Frequency Sources
- h. Processing Facilities
- i. Diagnostics
- j. Beam Dynamics and Simulations
- k. Cryogenics System
- l. Spallation Target Simulation
- m. Experimental Research Program

Section 4 – Participating Organizations

Each Participant may invite other institutions in its country to participate in cooperative activities under this MOU. For Fermilab, such participating organizations may include DOE national laboratories. For IBS, such participating organization may include MEST-supported laboratories and other MEST-funded institutions.

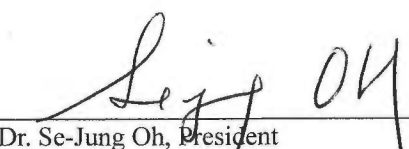
Section 5 – Commencement, Modification, and Discontinuation

- A. Cooperative activities under this MOU may commence upon signature by the Participants and continue for a 5-year period unless earlier discontinued in accordance with paragraph B of this Section.
- B. The Participants may mutually discontinue this MOU at any time in writing. A Participant that wishes to discontinue its participation in this MOU should endeavor to provide at least ninety (90) days written notice to the other Participant.
- C. This MOU may be modified in writing by mutual consent of the Participants, and may be extended for additional periods.


Section 6 – General Considerations

- A. This MOU does not create any legally binding obligations between the Participants.
- B. The conduct of cooperative activities contemplated by this MOU is subject to the availability of funding, personnel, and other resources.
- C. Each Participant should conduct the cooperation under this MOU in accordance with applicable laws and regulations to which it is subject, and international agreements to which its Government is party.
- D. Each Participant is responsible for the costs it incurs in participating in cooperative activities under this MOU.
- E. This MOU may be implemented by a “Purchase Order”, a “Cooperative Research and Development Agreement”, a “Work For Others Agreement” or other written arrangement.

Signed at Fermi National Accelerator Laboratory, in duplicate, this June day of 14, 2012



Dr. Se-Jung Oh, President
FOR THE INSTITUTE FOR BASIC SCIENCE



Dr. Piermaria J. Oddone, Director
FOR FERMILAB RESEARCH ALLIANCE, LLC