

**SCIENTIFIC AND TECHNICAL COOPERATION**

**Accelerator**

**Protocol III Between the  
UNITED STATES OF AMERICA  
and the EUROPEAN ORGANIZATION FOR  
NUCLEAR RESEARCH**

**To Agreement of May 7, 2015**

Signed at Geneva December 18, 2015



NOTE BY THE DEPARTMENT OF STATE

Pursuant to Public Law 89—497, approved July 8, 1966  
(80 Stat. 271; 1 U.S.C. 113)—

“ . . .the Treaties and Other International Acts Series issued under the authority of the Secretary of State shall be competent evidence . . . of the treaties, international agreements other than treaties, and proclamations by the President of such treaties and international agreements other than treaties, as the case may be, therein contained, in all the courts of law and equity and of maritime jurisdiction, and in all the tribunals and public offices of the United States, and of the several States, without any further proof or authentication thereof.”

**EUROPEAN ORGANIZATION FOR  
NUCLEAR RESEARCH**

**Scientific and Technical Cooperation:  
Accelerator**

*Protocol III to agreement of May 7, 2015.  
Signed at Geneva December 18, 2015;  
Entered into force December 18, 2015.*

**ACCELERATOR PROTOCOL III**

**between**

**THE DEPARTMENT OF ENERGY  
OF THE UNITED STATES OF AMERICA (DOE)**

**and**

**THE EUROPEAN ORGANIZATION  
FOR NUCLEAR RESEARCH (CERN)**

**to**

**THE CO-OPERATION AGREEMENT**

**concerning**

**SCIENTIFIC AND TECHNICAL CO-OPERATION  
IN NUCLEAR AND PARTICLE PHYSICS**

**2015**

The Department of Energy of the United States of America ("DOE"),

and

The European Organization for Nuclear Research ("CERN"), an Intergovernmental Organization having its seat at Geneva, Switzerland,

(hereafter collectively referred to as "the Parties"):

### **CONSIDERING:**

That the Parties collaborated to their mutual benefit under the International Co-Operation Agreement Concerning Scientific and Technical Co-Operation on Large Hadron Collider (LHC) Activities signed December 8, 1997;

That the Parties successfully participated in the original construction activities of the LHC accelerator and in the exploitation of the LHC under an Accelerator Protocol I signed December 19, 1997;

That the Parties renewed their collaboration by participating in the commissioning of the LHC through its consolidation to its nominal energy and performance under an Accelerator Protocol II signed July 11, 2014;

That the Parties renewed their collaboration under the Co-Operation Agreement Concerning Scientific and Technical Co-Operation in Nuclear and Particle Physics signed May 7, 2015 (hereinafter the "2015 Co-Operation Agreement");

That DOE has successfully participated in the design, research and development, and construction of the LHC, and that United States universities, national laboratories, and other organizations (hereinafter "U.S. Participating Organizations") play a major role in the accelerator system activities of the LHC;

That at the same time the participation of U.S. scientists, engineers, and technicians benefits the CERN program by providing intellectual and financial resources that allow substantial improvement in the capabilities of LHC accelerator, and therefore a greatly enhanced research program in elementary particle physics and nuclear physics;

That the excellent LHC results obtained thus far strongly support extending the LHC performance reach and continuing design studies and research and development for increasing the nominal accelerator luminosity by a factor of ten;

That research and development (R&D) for key technologies for the study and subsequent upgrade to the LHC Accelerator is being conducted in the framework of the United States' LHC Accelerator Research Program (LARP); and

That it is in the mutual interest of the Parties to continue and to extend their co-operation on the LHC accelerator consolidation plan and the LHC upgrade program, under this Accelerator Protocol III (hereinafter "Protocol"),

## **HAVE AGREED AS FOLLOWS:**

### **Article 1 Purpose**

- 1.1 The purpose of this Protocol is to create a framework for DOE's contribution, through U.S. Participating Organizations, to the implementation of ongoing LHC accelerator activities to reach its nominal energy and performance, and to the LHC upgrade program, based on the R&D conducted in the framework of LARP, that is planned to increase the LHC accelerator's nominal luminosity by a factor of ten. The resulting increase of the LHC luminosity aims at extending significantly the physics reach of the LHC to the benefit of the large United States experimental physics community engaged in activities at the LHC and enables their continued participation during the High-Luminosity LHC (hereinafter "HL-LHC") running period.
- 1.2 This Protocol provides a framework for U.S. Participating Organizations to contribute their intellectual resources in a design study towards future global collider activities that include substantial increases and improvements to the energy and luminosity after the HL-LHC running period.

### **Article 2 Scope**

- 2.1 DOE's contribution to the activities conducted under this Protocol, through U.S. Participating Organizations, may be in any form as may be jointly agreed by the Parties, and in particular may consist of:
  - (a) Accelerator science studies in view of reaching the nominal LHC performance and participation in the related machine studies;

- (b) Accelerator science studies, research and development, and fabrication of accelerator components in view of the planned HL-LHC upgrade. This covers accelerator physics studies, modeling and simulation, high-field magnet, crab cavity and collimation activities, both from a system and technology point of view;
- (c) Accelerator science studies and related research and development in view of assessing the feasibility of future LHC energy and luminosity upgrades;
- (d) Accelerator science studies on the LHC injector complex, in view of meeting the requirements of the LHC main ring upgrade;
- (e) Accelerator science studies related to the heavy ion nuclear physics program at the LHC and the Relativistic Heavy Ion Collider at Brookhaven National Laboratory;
- (f) Providing equipment, specialized material, components and software to CERN, in accordance with the provisions of Article 5 below; and
- (g) Any other accelerator science studies relevant to the LHC or to future CERN accelerator initiatives.

Any such contributions shall be addressed in implementing arrangements in the form of Addenda to this Protocol in accordance with Article 7 of this Protocol.

- 2.2 Subject to availability of appropriated funds, DOE's total contribution to the HL-LHC upgrade program shall be specified and incorporated under separate implementing arrangements in the form of Addenda to this Protocol in accordance with Article 7 of this Protocol. The application of any funds specified in these Addenda to the LHC accelerator upgrade costs will follow standard DOE accounting practices.

### **Article 3**

#### **Memoranda of Understanding**

- 3.1 DOE and/or its national laboratories shall conclude Memoranda of Understanding ("MOUs") with CERN that specify planned responsibilities for research and development, design, and prototyping of accelerator components for the HL-LHC upgrade.
- 3.2 The detailed planned responsibilities towards the construction of accelerator components for the HL-LHC upgrade and their installation

in the accelerator facility at CERN shall be specified through MOUs between DOE and/or its national laboratories and CERN.

- 3.3 The detailed planned responsibilities assigned to all U.S. Participating Organizations towards future accelerator system studies beyond the HL-LHC upgrade, including design, modeling and simulation, and research and development, shall be specified in MOUs that are separate from those specified in paragraphs 3.1 and 3.2 of this Article.
- 3.4 Except as otherwise agreed, understandings specified in MOUs in accordance with this Article shall not be legally binding, and shall be subject to corresponding implementing arrangements in the form of Addenda to this Protocol concluded in accordance with Articles 2 and 7 of this Protocol.

#### **Article 4 Management Structures**

- 4.1 For the purpose of implementing this Protocol, any work by DOE or its U.S. Participating Organizations on the HL-LHC upgrade shall be accomplished through a nationally co-ordinated program managed by DOE. Further, DOE and CERN shall each designate a Project Manager to ensure effective co-ordination and performance of all technical, financial and procurement activities related to the implementation of this Protocol. The DOE-designated Project Manager, in consultation with CERN, shall prepare a Project Management Plan, which shall describe the organization and distribution of management and other responsibilities among U.S. Participating Organizations regarding the U.S. HL-LHC Accelerator Upgrade Project.
- 4.2 Each Party's Project Manager shall provide regular reports to the Joint Cooperation Committee created under Article 9 of the 2015 Co-Operation Agreement.
- 4.3 In addition to continuous contact between the responsible technical personnel of the Parties, DOE shall designate its representative on formal governance panels for the CERN projects concerned. These arrangements are without prejudice to the operation of the Joint Cooperation Committee identified in Article 9 of the 2015 Co-Operation Agreement.



## **Article 5**

### **Transfer of Goods and Technical Data**

The Parties are obligated to transfer only those technical data and goods, including software, to fulfill their respective responsibilities under this Protocol and implementing instruments, in accordance with the Annex to the 2015 Co-Operation Agreement and the following provisions:

- 5.1 Each Party's activities under this Protocol shall be carried out in accordance with the applicable laws, regulations, and procedures to which it is subject.
- 5.2 The transfer of technical data for the purpose of discharging the Parties' responsibilities with regard to interface, integration, and safety shall normally be made without restriction, except as required by paragraphs 5.3, 5.4, and 5.5 of this Article.
- 5.3 All transfers of goods and proprietary data are subject to the following provisions:
  - (a) In the event a Party determines it necessary to protect such goods or data against unauthorized disclosure, such goods shall be specifically identified and such data will be marked.
  - (b) The identification of such goods and the marking of such data shall indicate that the goods and data may be used by the personnel of the receiving Party (including, in the case of DOE, authorized U.S. Participating Organizations) only for the purpose of this Protocol, and that such goods and data may not be transferred or disclosed to any other entity without the prior written permission of the furnishing Party.
  - (c) The receiving Party shall abide by the terms of the notice and protect any such goods and data from unauthorized use, transfer and disclosure, in accordance with applicable laws, regulations, and administrative practices.
- 5.4 All goods and data exchanged in the execution of this Protocol shall be used by the receiving Party exclusively for the purposes of the Protocol. Upon completion of activities under this Protocol where goods and data are marked proprietary, the receiving Party shall return or otherwise dispose of such goods and data, as directed by the furnishing Party.
- 5.5 In the event that information identified in a timely fashion as business-confidential is furnished or created under this Protocol, each Party and its participants shall protect such information in accordance with applicable laws, rules, regulations, and administrative practices. Information may be identified as "business-confidential" if a person having the information may derive an economic benefit from it or may

obtain a competitive advantage over those who do not have it, and the information is not generally known or publically available from other sources, and the owner has not previously made the information available without imposing in a timely manner an obligation to keep it confidential.

## **Article 6**

### **Entry into Force, Duration, and Termination**

This Protocol shall enter into force upon signature by both Parties. This Protocol shall remain in force for an initial period of five years and shall thereafter be renewed automatically, each time for a period of five years, unless a written notice of termination is given by one Party to the other Party, or the Parties have agreed on its renewal for a different period, at least six months prior to the renewal date, so long as the 2015 Co-Operation Agreement remains in force.

## **Article 7**

### **Amendment**

The Parties may amend this Protocol at any time by mutual written consent, so long as the 2015 Co-Operation Agreement remains in force. Implementing arrangements in the form of Addenda to this Protocol, which shall be subject to formal review by the Government of the United States and by CERN, are the preferred vehicles for legally-binding alterations or additions.

## **Article 8**

### **Final Provisions**

- 8.1 Each Party's participation in the activities contemplated by this Protocol is subject to the availability of appropriated funds, personnel, and other resources.

8.2 This Protocol is subject to and governed by the terms of the 2015 Co-Operation Agreement.

DONE at Geneva, Switzerland, in duplicate in the English language, on 18 December 2015

**FOR THE DEPARTMENT  
OF ENERGY OF THE UNITED  
STATES OF AMERICA:**

**FOR THE EUROPEAN  
ORGANIZATION FOR NUCLEAR  
RESEARCH:**



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Permanent Representative of the  
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