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Long Baseline Neutrino Facility (LBNF) Corrector Magnets

Cooperative Research and Development Agreement Final Report

CRADA Number: FRA-2016-0046

Fermilab Technical Contact: Vaia Papadimitriou

Report Date:
May 21, 2025

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In accordance with Requirements set forth in Article XI of the CRADA document, this document is the final CRADA report, including a list of Subject Inventions, to be forwarded to the Office of Science and Technical Information as part of the commitment to the public to demonstrate results of federally funded research.

CRADA number: FRA-2016-0046

CRADA Title: Long Baseline Neutrino Facility (LBNF) Corrector Magnets

Parties to the Agreement: INSTITUTE FOR HIGH ENERGY PHYSICS, CHINESE ACADEMY OF SCIENCES

Sponsoring DOE Program Office(s): Office of Science

DOE Funding Commitment Table (report all DOE funding contributions by year):

	Year 1		Year 2		Year 3		
Funding Type	Funds-in	* In-kind	Funds-in	* In-kind	Funds-in	* In-kind	Totals
Participant 1	0	\$440K	0	\$435K	0	\$335K	\$1210K
Participant 2							
Dept. of Energy	10K		15K		15K		\$40K
Totals							\$1250K

Abstract of CRADA work:

The Long Baseline Neutrino Facility (LBNF) includes at the Fermi National Accelerator Laboratory (Fermilab) site a Beamline which will aim neutrinos towards massive detectors at the Sanford Underground Research Facility (SURF) at South Dakota. The neutrinos will be created by a beam of 60-120 GeV protons extracted from Fermilab's Main Injector interacting with a target located in the end of the LBNF proton beamline. The design of the proton beamline involves 79 conventional magnets; 23 are corrector magnets. These correctors are of a new design which evolved from those built for the Fermilab Main Injector.

Following the production of a prototype corrector magnet by the Institute of High Energy Physics (IHEP) and its testing by both IHEP and Fermilab, IHEP will procure the materials for the 24 (including one spare) corrector magnets needed by the LBNF proton beamline; then, will build, test and certify them.

Summary of Research Results:

There were 26 magnets completed and delivered by October 2020. Fermilab tested 8 successfully. No further work was performed on this agreement. The agreement remained inactive and terminated on 10/03/2024 in conjunction with the contract transition at Fermilab.

Related Reports, Publications, and Presentations:

There are no public reports, presentations or publications from this Agreement.

Subject Inventions listing:

None

Report Date: May 21, 2025

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