Department of Energy
Office of Science
Washington, DC 20585

Dr. Robert Edwards
Jefferson Lab
Theory Group
12000 Jefferson Avenue
Cebaf Center, Suite 1
Newport News, Virginia 23606

Dear Dr. Edwards:

The Office of High Energy Physics (HEP) and the Office of Nuclear Physics (NP) Divisions of the Office of Science of the Department of Energy will conduct a review of your proposal for the extension of the Lattice Quantum Chromo Dynamics Computing (LQCD) research program to the next five year period, 2025-2029, at the Hilton Rockville**,** 1750 Rockville Pike, Rockville MD 20852 on May 29-30, 2024. A review panel consisting of computational scientists and high energy and nuclear physics theoretical and experimental physicists will evaluate both the scientific and computing plans that you have presented to us in your proposal.

This review will focus on the scientific justification of the proposal and its implementation on mid-scale Institutional and dedicated cluster hardware operating at Fermi National Accelerator Laboratory (FNAL) and Brookhaven National Laboratory (BNL).

The critical issues to be examined in the May 29-30 review include:

- What is the scientific case for continuing simulations of Quantum Chromodynamics (QCD) in high energy physics past 2024? Are the goals of the proposed research program aligned with the experimental and theoretical physics goals of HEP for the period 2025-2029?
- What is the impact and interplay of lattice QCD simulations on the experimental and theoretical programs of HEP? Will the value of our experimental and theoretical programs be measurably enhanced by such simulations? Give specific examples where LQCD calculations impact the experimental program and add value to its experimental results.
- Why is an extended project needed if the Office of Advanced Scientific Computing Research is providing the lattice community access to Leadership Class machines? Particularly, is mid-scale hardware, such as Computer Processing Unit or Graphics Processing Unit clusters, essential and cost effective in such an environment? What is the optimal mix of machines, Leadership Class and mid-scale clusters, given realistic budget scenarios?
- What are the plans at FNAL and BNL for LQCD cluster computing? How are these plans incorporated into your proposal for the LQCD research program in 2025-2029?

The review will begin with a closed executive session at 8:30AM on May 29, followed by presentations by you and your team that address the four charge points. The second half of the review will consist of additional executive sessions, preliminary report writing and a close-out where the review team will give you immediate feedback on your plans and presentations. You should work with John Kogut, the Federal Project Manager, and Bill Kilgore, Program Manager for Theoretical Physics, to generate an agenda for the review.

Each panel member will be asked to review those aspects of the review presentations that are within their scope of expertise. Each will contribute to a comprehensive review report that will address the four charge points above as well as those you will receive in a charge letter from NP. John Kogut will produce a final summary report based on the information provided by the reviewers. That report will have recommendations for your consideration that you and your team should respond to in a timely fashion.

If you have additional questions, please contact John Kogut and/or Bill Kilgore in HEP.

We look forward to an informative and stimulating review.

Sincerely,

Regina Rameika

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Regina Rameika
Associate Director of Science
for High Energy Physics
Office of Science