

Dr. Andreas Kronfeld
High Energy Theory Group
Wilson Hall
Fermi National Laboratory
P.O. Box 500
Batavia, IL 60510-0500

Dear Dr. Kronfeld,

The High Energy Physics (HEP) division of the Office of Science of the Department of Energy will conduct a review of your proposal for the extension of the LQCD research program to the next five year period, 2020-2024, at the Cambria Rockville Hotel at 1 Helen Heneghan way, Rockville, MD 20850 (<https://www.cambriasuitesrockville.com/>) on July 9-10, 2019. A review panel consisting of computational scientists and high energy theoretical and experimental physicists will evaluate both the scientific and computing plans that you have presented to us in your recent whitepapers.

This review will focus on the scientific justification of the proposal and its implementation on mid-scale Institutional Cluster hardware operating at Fermilab and Brookhaven National Laboratory.

The critical issues to be examined in the July 9-10 review include:

- What is the scientific case for continuing simulations of Quantum Chromodynamics (QCD) in high energy physics past 2019? Are the goals of the proposed research program aligned with the experimental and theoretical physics goals of HEP for the period 2020-2024?
- 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? In particular, is mid-scale hardware, such as CPU or GPU Institutional 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 Fermilab and Brookhaven for LQCD Institutional Cluster computing? How are these plans incorporated into your proposal for the LQCD research program in 2020-2024?

The review will begin with a closed executive session at 8:30AM on July 9, 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 write an individual report on his/her findings. These reports will be due at the DOE two weeks after completion of the review. John Kogut will accumulate the reports and produce a final summary report based on the information in the letters. 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 in HEP and/or Bill Kilgore.

We look forward to an informative and stimulating review.

Sincerely,

James Siegrist
Associate Director
Office of High Energy Physics

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