Lattice QCD Extension Computing Project
(LQCD-ext)

Response to Recommendations from the 2014 DOE Annual Progress Review of the LQCD-ext Computing Project

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May 13, 2015

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LQCD-ext 2014 Annual Progress Review

Response to Review Recommendations

INTRODUCTION

On May 15-16, 2014, the U.S. Department of Energy (DOE) Office of High Energy Physics and the Office of Nuclear Physics conducted an Annual Progress Review of the LQCD-ext (LQCD Extension) project. The review was held at the Fermi National Accelerator Laboratory and resulted in a written report that contained no formal recommendations. However, the report did contain five suggestions to help improve project effectiveness and impact. This document summarizes the project response to these suggestions, along with subsequent actions taken.

RESPONSE TO SUGGESTIONS

Suggestion #1: Work on calculations of the hadronic contributions to g-2 should receive a high priority, as this will be crucial in trying to understand if the current discrepancy between theory and experiment is a signal for new physics. Continued work on nucleon properties for the muon->electron conversion experiment is also very important.

Report Section: LQCD-ext Review – Continued Significance and Relevance

Response: W We agree. The Scientific Program Committee has continued to give high priority to g-2 calculations. There are three major projects to calculate hadronic corrections to the muon g-2 in the approved projects for the 2015-16 allocation year: two to calculate vacuum polarization contributions and one to calculate contributions from light-by-light scattering.

Suggestion #2: A summary table of the physics milestones including projected results, actual results, and future goals would be useful at each Annual Review. There are such tables buried in the various USQCD white papers, but it would be useful if the project could make them more accessible.

Report Section: LQCD-ext Review – Progress towards Scientific and Technical Milestones

Response: We agree with this suggestion and will work on developing a summary table as suggested.

Suggestion #3: The reduced guidance provided by NP and HEP for the next five-year cycle of the hardware projects is a major concern. Even small improvements compared to the

currently envisioned budget of LWCD-ext II would make a disproportionately large impact on the science results. The project should think creatively about how to increase the hardware fraction in its next five year cycle.

Report Section: LQCD-ext Review – Feasibility and Completeness of Budget and Schedule

Response: The computing project is taking steps to increase the budget fraction for computing hardware by adjusting the 5-year procurement strategy and plan. The planned funding profile does not provide sufficient funds in FY15 for any hardware procurement. Tradeoffs between executing annual procurements versus planning and executing procurements across fiscal year boundaries in FY16-17 and FY18-19 will be carefully studied for effects on overhead costs and other areas. In addition, the project has performed a detailed analysis of our staffing plan and has made adjustments in support levels where possible to reduce operating costs; again, these cost savings will be applied to the hardware budget to increase available funds. Going forward, the project will continue to periodically review and adjust operating costs in order to maximize the level of funds available for computing hardware.

<u>Suggestion #4:</u> The collaboration should continue to think about the best balance between sparing younger (but already permanent rank) scientists from bureaucratic responsibilities and ensuring the best long-term future of the US lattice QCD community.

Report Section: LQCD-ext Review – Effectiveness of Management Structure and Responsiveness to Past Recommendations

Response: The success of a young person's career is based almost entirely on his or her success as a researcher, and very little on bureaucratic success. That said, it is important for young people who are likely future leaders to understand how the system works, so some service by young people is healthy for them and for USQCD. We do not ask younger people to serve in the most demanding and time-consuming roles in USQCD: service on the Executive Committee or chairing the Scientific Program Committee. It is common for young people to be asked to contribute sections of text to USQCD white papers and proposals. The most promising young people are sometimes asked to serve as members of the SPC, though not as its chair. In even rarer cases, a junior person may be asked to represent USQCD in one of the science talks at a review, but this is only done when we expect that the talks will be as high in quality of those of the senior leaders.

<u>Suggestion #5:</u> USQCD has a Charter which was negotiated with the DOE. However, it does not appear to have a constitution with formal bylaws. This structure could be useful for

institutional memory, succession planning, and allocation procedures, especially if USQCD is challenged with diminishing resources in the future. USQCD and the DOE should address this short-coming.

Report Section: LQCD-ext Review – Effectiveness of USQCD, Scientific Impact, Procedures and Related Activities

Response: The "charter" to which the suggestion refers is text in the LQCD Project Execution Plan that has been agreed to by the Project and the DOE, and which describes the organization of USQCD. (See sections 5.1.6-5.1.8 of the 2015 Project Execution Plan.)

This text has been augmented this year by a four-page document, *Charter of USQCD*, which is posted on the USQCD web site, www.usqcd.org/documents/charter.pdf . This document describes in more detail and specificity the organization and procedures of USQCD. These procedures have evolved over the years in response to discussions with USQCD members and suggestions from review committees, and we expect them to continue to evolve in the future.