

LQCD-ext. II Overview & USQCD Governance

Robert Edwards
Jefferson Lab

USQCD - federation of science collaborations

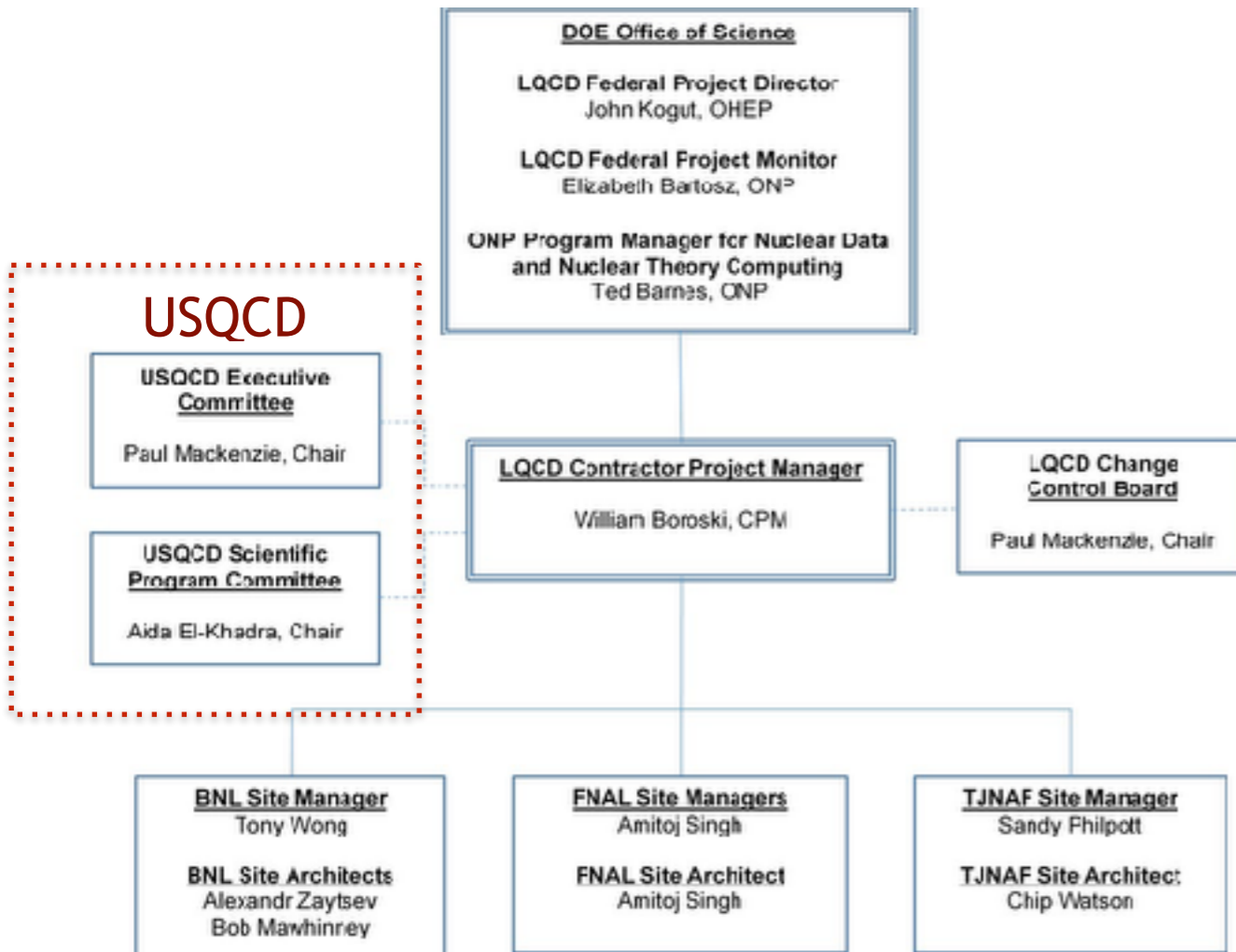
- Charter of USQCD - <https://www.usqcd.org/documents/charter.pdf>
 - USQCD is a consortium of collaborations and individuals in the US using lattice field theory techniques to solve fundamental problems in high energy and nuclear physics....
- Represents almost all of the lattice gauge theorists in the US; ~ 160 people.
 - ~ 100 participating in physics proposals in a typical year.
- Physics calculations are done by smaller component collaborations within USQCD:
 - Fermilab, HotQCD, HPQCD, HadSpec, LHPC, LSD, MILC, NPLQCD, RBC, ...
 - These are the core entities of the US lattice community.

USQCD responsibilities

- LQCD-ext. II Project and now Nuclear Physics Initiative
- Hardware and Software development grants
 - 2001 - 2012: SciDAC 1 & 2
 - 2013 - 2017: (HEP+ASCR), (NP+ASCR) SciDAC-3
 - 2016 - 2020: Exascale Computing Project (ECP)
 - 2017 - 2022: NP+ASCR SciDAC-4
- Computing time requests
 - INCITE grants
 - Early Science Time
 - Blue Waters/NSF

Computing organization

LQCD ext. II thru Jan. 2018

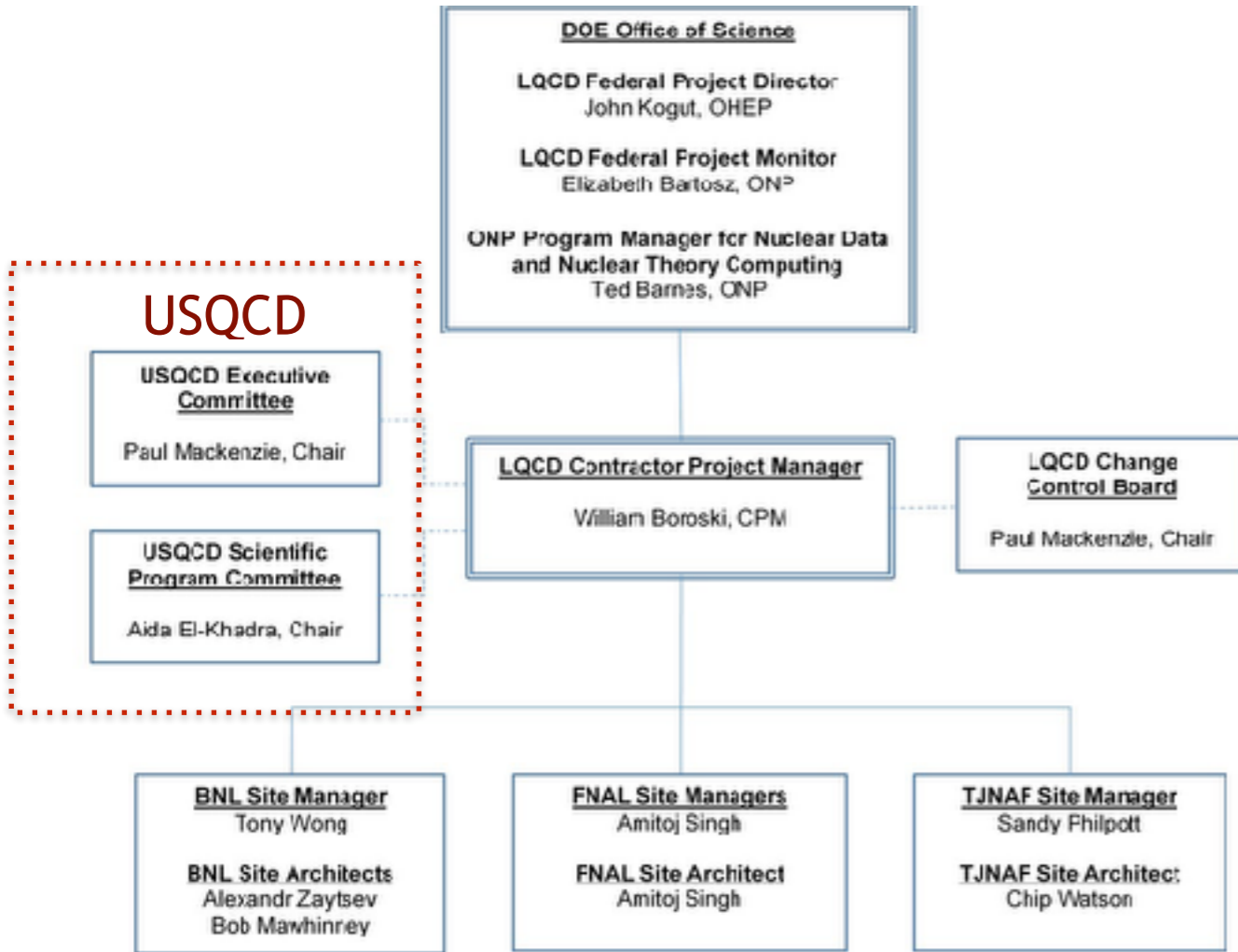


See talk by Bill Boroski

Computing organization

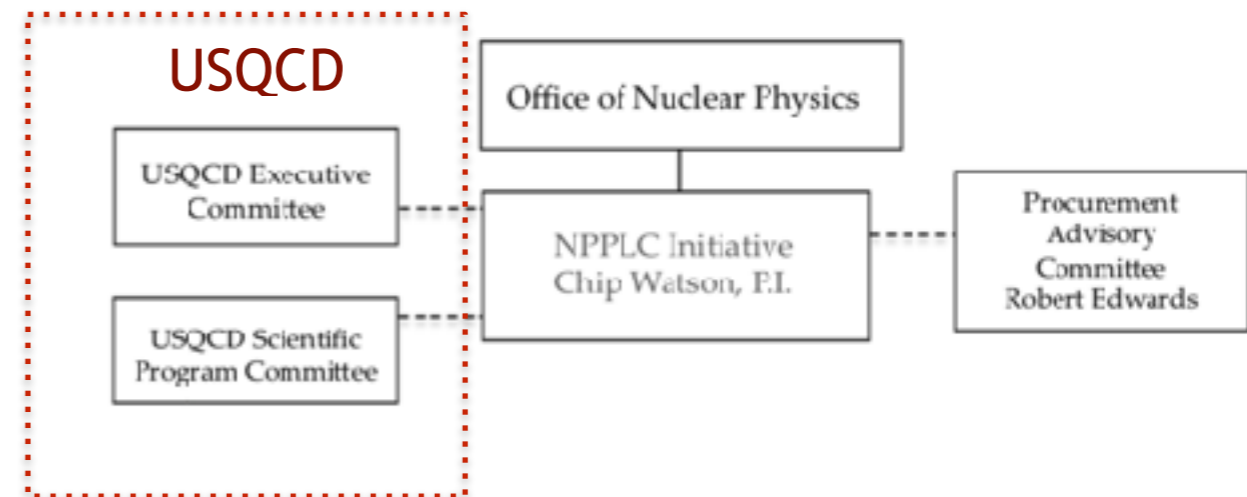
Going forward - USQCD interacts with two projects

LQCD ext. II thru Jan. 2018



See talk by Bill Boroski

NP structure since Jan. 2018



Not part of this review

USQCD organization

Executive Committee:

Andreas Kronfeld (HEP chair)
Robert Edwards (NP co-chair)

Scientific Program Committee:

Aida El Khadra (chair)

Software Committee:

Richards Brower (chair)

Constituent science collaborations

Science Advisory Board

USQCD is funded through SciDAC, the Exascale Computing Project, the LQCD project(s), and through base HEP and NP funds at BNL, Fermilab, and JLab.

USQCD web page: <http://www.usqcd.org>

Organization

- In 2003 when USQCD hardware funding began, Peter Rosen (head of HEP & NP) expected the hardware operated as a **national facility**
 - Individual science collaborations request time
- By design, EC balances interests of HEP & NP, interests of participating labs and large science collaborations, physics areas (e.g., thermo, BSM) carried out by smaller groups
- By design, SPC balances scientific interests, large collabs, smaller collabs
 - SPC has good track record of supporting proposals of small collabs, of junior PIs
 - Many researchers established their reputation with projects on LQCD computers
- Science Advisory Board provides feedback on white-papers and proposals
- Very productive model

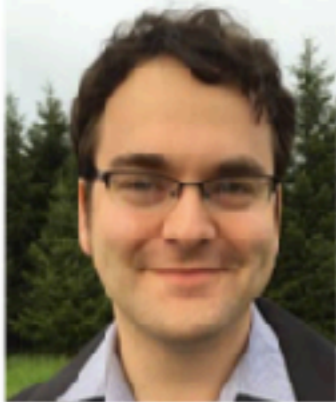
Changes in governance

- Current EC members:
 - Richard Brower, Norman Christ, Carleton Detar, Robert Edwards, **Will Detmold**, Anna Hasenfratz, **Andreas Kronfeld**, **Swagato Mukherjee**, Kostas Orginos, Aida El Khadra (SPC ex-officio) [**new members**]
 - **Rotations off (2018) - Paul Mackenzie (chair), Frithjof Karsch, Martin Savage**
- Changes in governance:
 - Andreas Kronfeld (chair/HEP), Robert Edwards (deputy/NP)
 - Terms are 3 years: chair/NP + new-deputy/HEP in next cycle
 - Charter will be amended
- New junior EC members (2 year rotations):
 - Will Detmold (elected 2 years ago - now member)
 - Elections proceeding now

Candidates for the 2018 Election to the EC



👤 Jack Laiho
Syracuse University



👤 Christoph Lehner
Brookhaven, High Energy Theory



👤 Huey-Wen Lin
Michigan State University



👤 Meifeng Lin
Brookhaven, Computational Science
Initiative

Scientific Program Comm. (SPC) members



Past and current members:
serve about 3 - 4 years

Chairs:
El Khadra, Hasenfratz,
Edwards, Karsch, Kronfeld,
Rebbi

SPC allocation process

- After approval from the EC, the SPC issues the Call-for-Proposals
- The SPC collects and reviews the proposals. Further information is often requested from the proposers.
- After deliberation, SPC arrives at an allocation through an internal vote
 - About 80 hours total is spent
- Recommendations for allocation are submitted to the EC for approval. The facility managers are also consulted
- The SPC notifies the PI-s and gives a written report
- Hosts annual All-Hands Meeting for discussions
- Last year, to encourage smooth use of resources, we instituted system of quarterly allocation reductions for projects that are late in beginning running (like at NERSC).

SPC allocation process, cont.

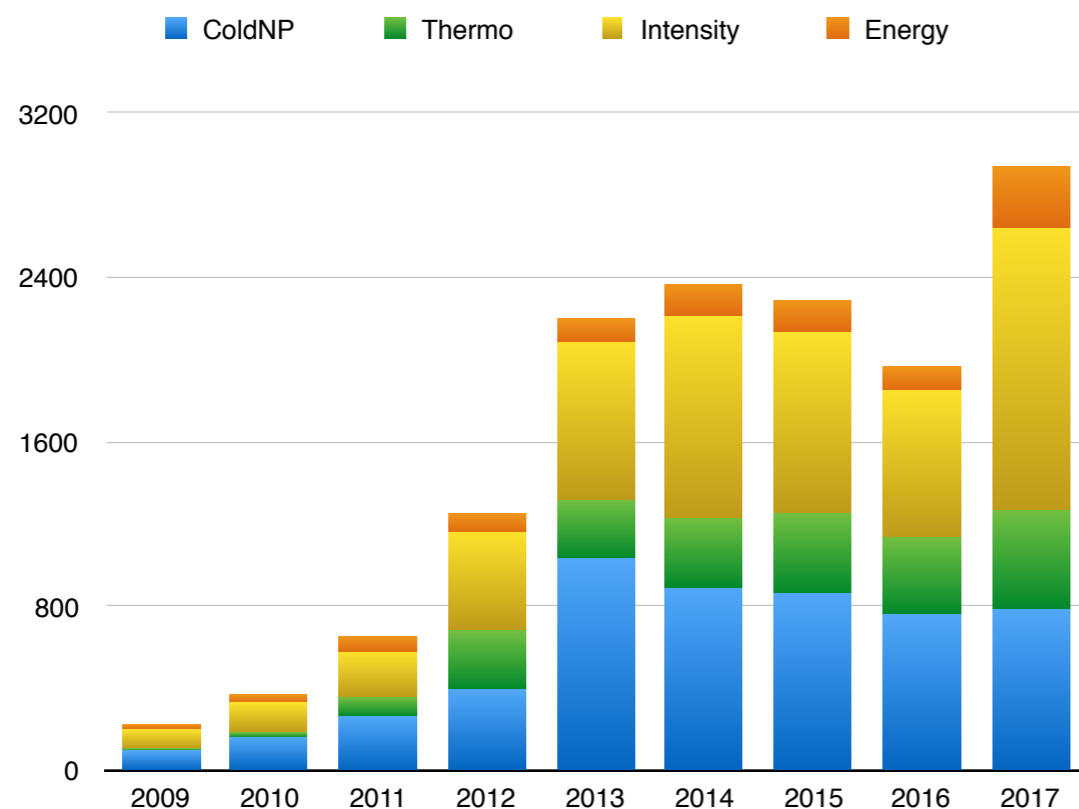
- The Call-For-Proposals & White Papers outline the scientific goals of USQCD
- Members of the collaboration submit proposals to the SPC requesting resources for scientific computations, and address how they will achieve the goals of USQCD
- While the SPC has suggested calculations that are of importance, it has not issued top-down requests - not perceived as required at this stage, but could do so later
- Rather, the SPC evaluates the proposals and recommends allocations based on the proposal's technical and scientific merit, and the relevance and importance to meet the scientific goals of USQCD

Allocations

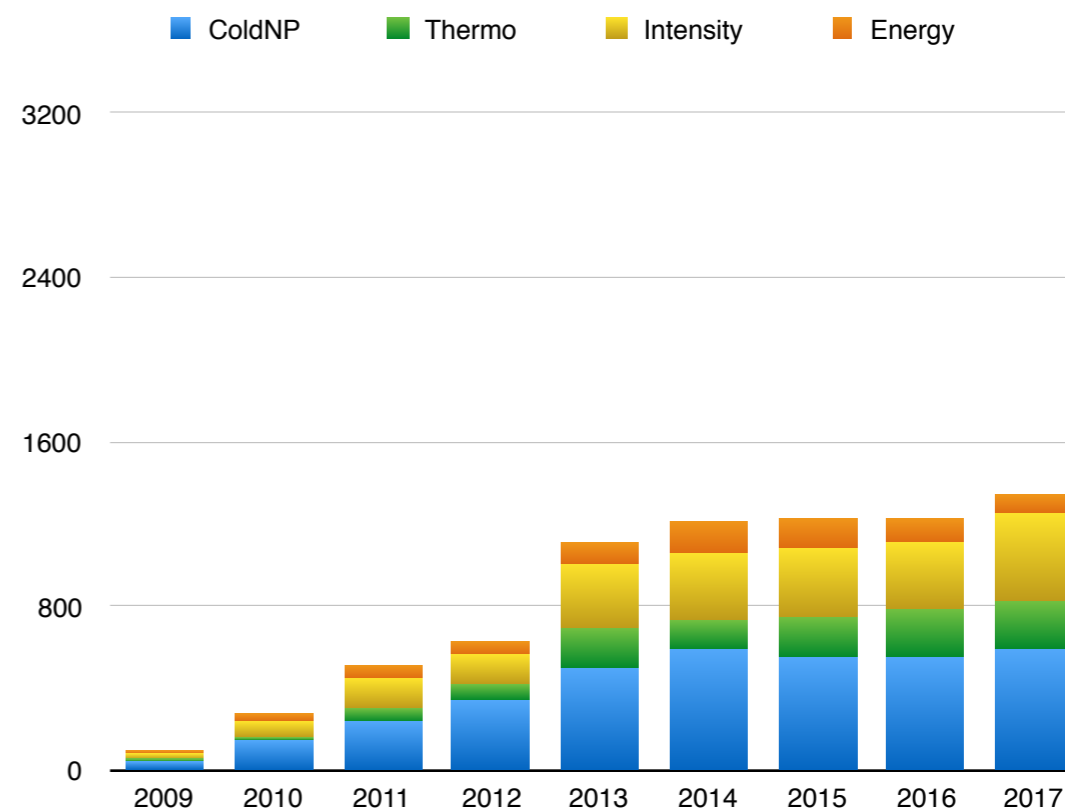
Total by Field (in units of equiv. “M-Jpsi”-hours)

Jpsi ~ 1.2 GFlops/sec

LQCD+leadership



LQCD hardware



NP and HEP are approximately equal by agreement

LQCD about half of total

LQCD essential leverage of leadership resources → greater productivity

Current LQCD-hardware project portfolio

| M-Jpsi | Field | Title |
|--------|--------|--|
| 13 | EF | Thermodynamics of 3D Supersymmetric YM |
| 49 | EF | Composite Higgs with new BSM models |
| 5 | EF | Composite Higgs potential from SU(4) gauge theory.... |
| 10 | EF | Step scaling investigation to test universality |
| 12 | EF | Simulations with 4+6 flavors using smeared Möbius DW fermions |
| 53 | muon | Hadronic contributions to the muon g-2 using HISQ fermions |
| 45 | IF | pi-pi scattering and K to pi-pi decay calculations at the physical p |
| 8 | IF | Step scaling studies to improve the calculation of electroweak de |
| 14 | IF | Determination of Vcb from Semi-leptonic Decays B ->D l nu using |
| 20 | IF | Lattice calculation of delta I=1/2 K to pi-pi amplitude |
| 31 | muon | QCD+QED studies using Twist-Averaging |
| 14 | IF | Investigation of B -> Kpi I^+I^- decays with lattice QCD |
| 62 | IF | Standard Model Parameters and the Search for Physics Beyond th |
| 14 | IF | Semi-leptonic B and Bs-decays with charming hadronic final state |
| 30 | muon | QCD with 4 flavors HISQ |
| 68 | muon | Muon g-2 HVP using HISQ |
| 17 | B | Taming quark chromo EDM contribution to the neutron EDM |
| 6 | B | High Moments of Parton Distribution Functions |
| 163 | NP | Meson resonances from Anisotropic clover lattices |
| 56 | NP | Nucleon Quark-Gluon Structure with Clover-Wilson Fermions |
| 8 | B | Computing Pion Parton Distribution Function on Fine Lattice |
| 36 | IF | The Nucleon Axial-Vector Form Factor at the Physical Point with t |
| 26 | B | Neutron electric dipole moment from lattice QCD with theta term |
| 42 | B | Spin and 3-dimensional structure of the Nucleon |
| 55 | B | Pion Properties from Lattice QCD |
| 85 | NP | Nuclear Modification of Nucleon Structure |
| 49 | NP | Gluonic GPD of the nucleon |
| 29 | B | Calculation of nucleon axial form factors, proton decay ... |
| 78 | NP | Quark Spin from anomalous Ward identity |
| 10 | Thermo | QCD equation of state with 2+1+1 flavors of HISQ |
| 228 | Thermo | Non-Gaussian cumulants of conserved charges fluctuations |
| 5 | Thermo | High statistics spectral properties of in-medium quarkonium ... |

Energy Frontier(EF)/BSM

Mixture of large flagship projects

Intensity Frontier (IF)
includes μ g-2

Smaller/development projects critical to long-term health of US lattice QCD

Cold NP
overlaps with Intensity

Some projects benefit multiple scientific areas

- PDF-s
- EDM-s
- axial FF-s

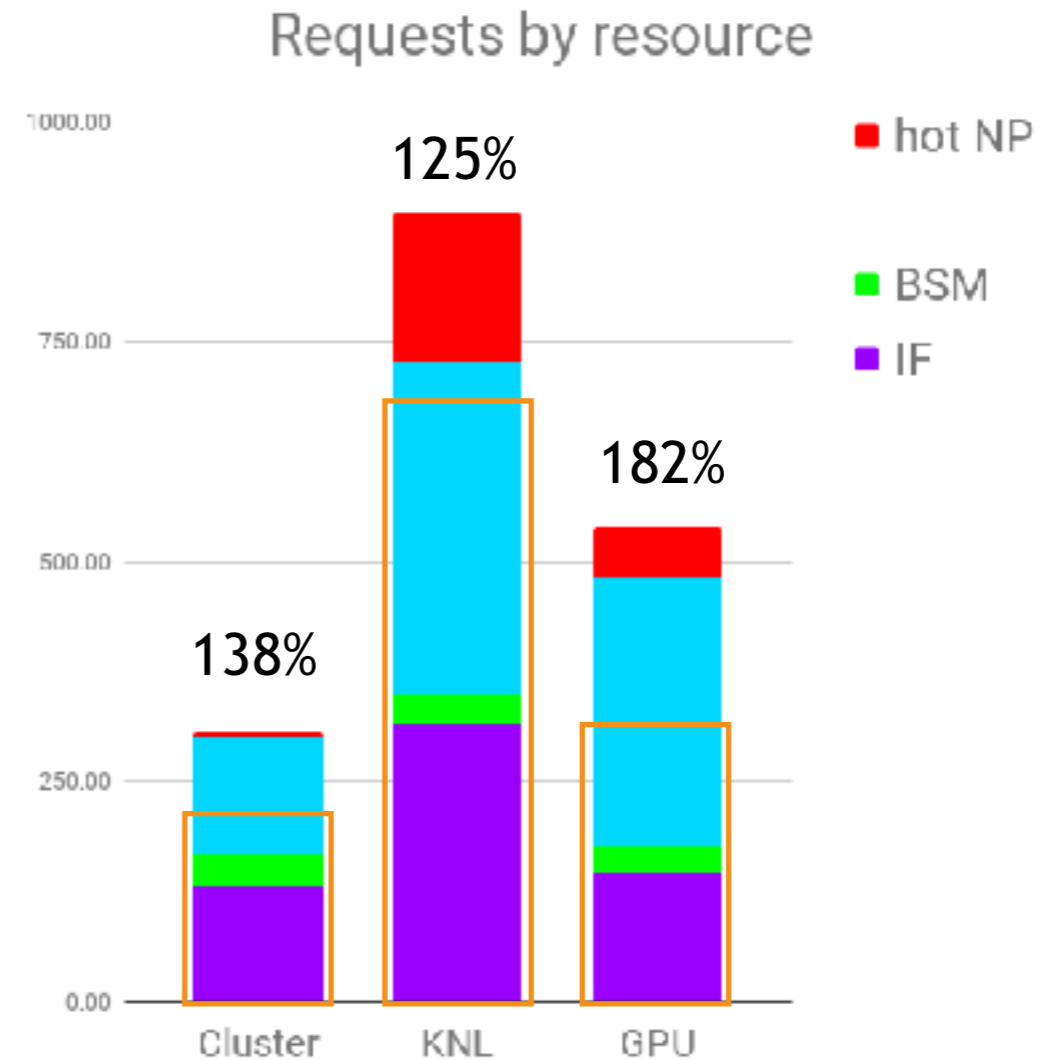
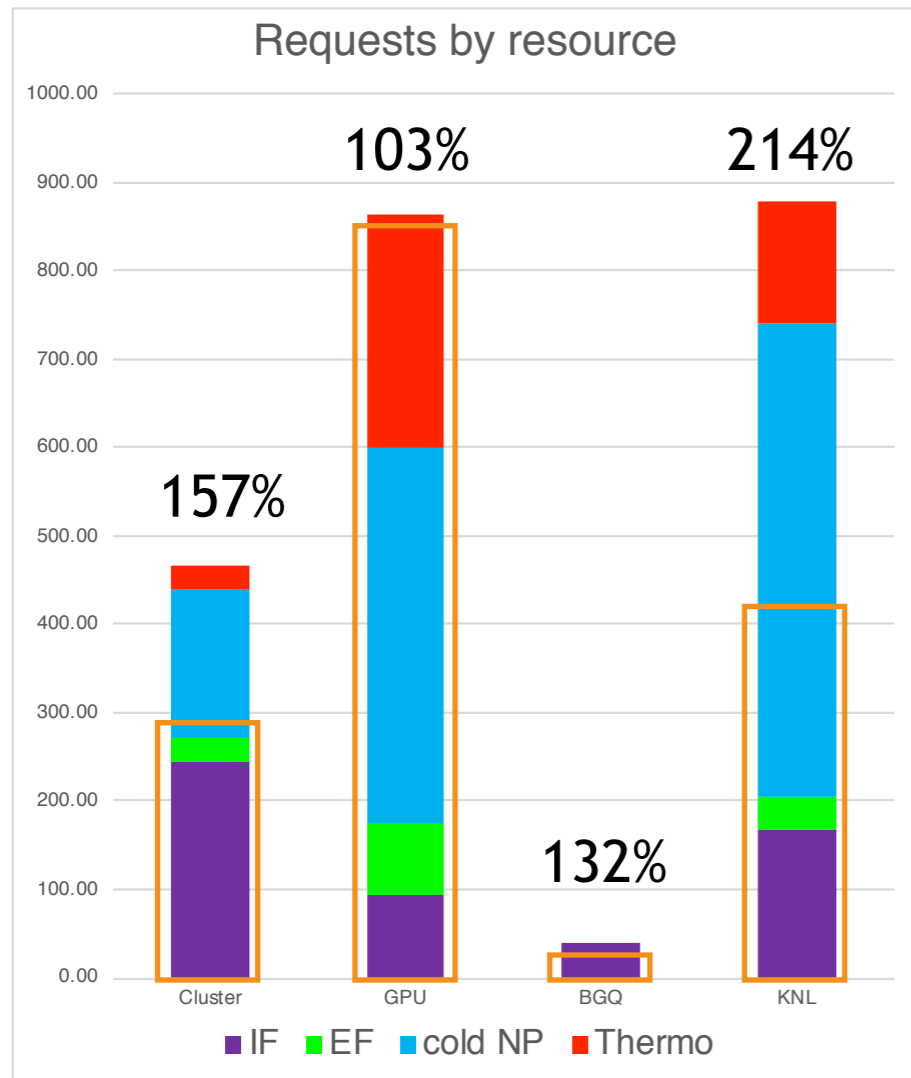
Hot NP

SPC considers how all projects benefit USQCD interests for HEP+NP

2018-2019 proposal requests

2017: 35 Type A (large) proposals

2018: 31 Type A proposals



- Requests vary according to physics needs
- SPC/USQCD & facility initiatives work together to optimize science program

Data Management plan

- USQCD is working with the facilities to develop a DM
 - ultimately, data is user's responsibility, but can be layered on a USQCD DM.
 - envision USQCD can provide a DM defining/suggesting important data, paths, etc.
 - USQCD DM layered on a lab DM. Model might be expts. at labs.
- Changes of computing models at labs requires negotiation regarding near-term and long-term storage

USQCD PhD-s

- Students are encouraged to submit proposals to USQCD
 - often start with smaller (type B) proposals
- More than 120 current/completed PhD-s since 2000
 - 90 since 2008
- Career progress tracked (list since 2008 in backup slides)
- Combination of hardware/scientific infrastructure → **productivity**

Junior faculty and staff job creation

| | Year | Research institution, HEP | Research institution, NP | Computational scientist | Teaching college | Industry | Foreign |
|---------------------------|------|---------------------------|--------------------------------|-------------------------|-------------------|----------|-----------------|
| Zohreh Davoudi | 2017 | | Maryland/RBRC | | | | |
| Luchang Jin *** | 2017 | Connecticut/RBRC | | | | | |
| Phiala Shanahan **** | 2017 | | William&Mary/JLab | | | | |
| Raul Briceno **** | 2017 | | Old Dominion/JLab | | | | |
| Heechang Na | 2017 | | | Ohio Supercomp. | | | |
| Xu Feng | 2017 | | | | | | Peking |
| Mridupawan Deka | 2017 | | | | | | Dubna |
| Anyi Li | 2017 | | | | | IBM | |
| Prasad Hegde | 2017 | | | | | | Indian Inst Sci |
| Chris Bouchard | 2016 | | | | | | Glasgow |
| Sergei Syritsyn | 2016 | | Stony Brook/RBRC | | | | |
| Martha Constantinou | 2016 | | Temple | | | | |
| Andrea Schindler | 2016 | | MSU | | | | |
| Huey-Wen Lin | 2016 | | MSU | | | | |
| Alexei Bazavov | 2016 | | MSU | | | | |
| Mattian Wagner | 2015 | | | | | NVIDIA | |
| Ethan Neil *** | 2015 | Colorado/RBRC | | | | | |
| Christoph Lehner ** | 2014 | BNL | | | | | |
| Mei-Feng Lin | 2014 | | | BNL | | | |
| Stefan Meinel *** | 2014 | Arizona/RBRC | | | | | |
| Hiroshi Ohno | 2014 | | | | | | Tsukuba |
| Heng-Tong Ding | 2013 | | | | | | CCNU |
| Todd Evans | 2013 | | | TACC | | | |
| Andre Walker-Loud**, **** | 2013 | | Wm & Mary/JLab→LBL | | | | |
| Jack Laiho | 2013 | Glasgow→Syracuse | | | | | |
| Christopher Thomas | 2013 | | | | | | Cambridge |
| Ruth Van de Water | 2012 | BNL→Fermilab | | | | | |
| Brian Tiburzi *** | 2011 | | CUNY/RBRC | | | | |
| Andrei Alexandru * | 2011 | | GWU | | | | |
| Elvira Gamiz | 2011 | | | | | | Granada |
| Kate Clark | 2011 | | | | | NVIDIA | |
| Ron Babich | 2011 | | | | | NVIDIA | |
| Christopher Aubin | 2010 | | | | Fordham | | |
| Swagato Mukherjee | 2010 | | BNL | | | | |
| Changhoan Kim | 2010 | | | | | IBM | |
| Will Detmold ** | 2009 | | Wm & Mary →MIT | | | | |
| Enno Scholz | 2009 | | | | | | Regensburg |
| Taku Izubuchi | 2008 | BNL | | | | | |
| James Osborn | 2008 | | | Argonne | | | |
| Chris Dawson | 2007 | Virginia/JLab | | | | | |
| Nilmani Mathur | 2007 | | | | | | Tata Institute |
| Joel Giedt | 2007 | RPI | | | | | |
| Matthew Wingate | 2006 | | | | | | Cambridge |
| Jozef Dudek **, **** | 2006 | | Old Dominion/JLab→William&Mary | | | | |
| Jimmy Juge | 2006 | | | | U. of the Pacific | | |
| Peter Petreczky | 2006 | | BNL | | | | |
| Balint Joo | 2006 | | | JLab | | | |
| Kieran Holland | 2006 | | | | U. of the Pacific | | |
| Kostas Orginos **, **** | 2005 | | Wm & Mary/JLab | | | | |
| George Fleming | 2005 | | | Yale | | | |
| Tom Blum ** *** | 2003 | Connecticut/BNL | | | | | |
| Silas Beane * | 2003 | | UNH→U Wash. | | | | |
| Total | | 10 | 17 | 6 | 3 | 5 | 11 |

* NSF Early Career Award
 ** DoE OJI/Early Career
 *** RIKEN/BNL bridge positions
 **** JLab joint positions

Good job creation in last few years

Nine new US faculty jobs in last three years

Job drivers - joint/bridge with JLab & RBRC

Schedule

Next up are the science talks, then management and facilities

| | | |
|--|--|--|
| 08:30 Executive Session | (60 min) | |
| 09:30 Welcome | (10 min) <i>David Lissauer</i> | |
| 09:40 Logistics and Introductions | (5 min) <i>Bill Boroski</i> | |
| 09:45 LQCD-ext II Overview & USQCD Governance | (25 min) <i>Andreas Kronfeld</i> | Governance |
| 10:10 LQCD-ext II Overview & USQCD Governance | (20 min) <i>Robert Edwards</i> | |
| 10:30 Break | (20 min) | |
| 10:50 Science Talk 1: Cold Nuclear Physics | (30 min) <i>Will Detmold</i> | Scientific achievements |
| 11:20 Science Talk 2: Heavy Ion Physics | (30 min) <i>Peter Petreczky</i> | |
| 11:50 Science Talk 3: Beyond the Standard Model | (20 min) <i>Ethan Neil</i> | |
| 12:10 Lunch / Executive Session | (50 min) | |
| 13:00 Science Talk 4: QCD for HEP | (40 min) <i>Christoph Lehner</i> | |
| 13:40 LQCD-ext II: Management and Performance | (60 min) <i>Bill Boroski</i> | LQCD project management and technology |
| 14:40 LQCD-ext II: FY17/18 Acquisition Plan & Status | (20 min) <i>Bob Mawhinney</i> | |
| 15:00 Break | (20 min) | |
| 15:20 LQCD-ext II: BNL Institutional Cluster Adoption | (20 min) <i>Tony Wong</i> | |
| 15:40 LQCD-ext II: Accomplishments and Status of JLab Facilities | (20 min) <i>Chip Watson</i> | |
| 16:00 Lattice QCD in FY19 and Beyond | (40 min) <i>Andreas Kronfeld</i> | Outlook |
| 16:40 Executive Session | (60 min) | |
| 17:40 Committee request for additional information | <i>John Kogut / Project Leadership</i> | |
| 18:00 Adjourn | | |

Backup & other stuff

USQCD PhDs, 2008-present (1)

More than 120 current/completed PhD-s since 2000, and 90 since 2008

Totals by subject area (since 2000):

HEP: 46

Cold NP: 41

BSM: 23

Thermo: 3

HEP, Cold NP: 4

| | | | | | | |
|-----------|----------|------|--------------------------|------------------|--|----------|
| Hashimoto | Koichi | 2008 | Kanazawa | Izubuchi | FIXSTARS (computer industry) | HEP |
| Na | Heechang | 2008 | Indiana University | Gottlieb | Ohio Supercomputer Center | HEP |
| Li | Shu | 2008 | Columbia | Christ | | HEP |
| Cheng | Michael | 2008 | Columbia | Christ | | BSM |
| Sigaev | Dmitry | 2008 | MIT | Negele | HBK Capital Management | Cold NP |
| Babich | Ronald | 2009 | Boston University | Rebbi | NVIDIA Corp | BSM |
| Chowdhury | Saumitra | 2009 | UConn | Blum | | HEP |
| Wong | Chik Him | 2009 | Carnegie Mellon U | Morningstar | Wuppertal U | BSM |
| Torok | Aaron | 2009 | U New Hampshire | Beane | | HEP |
| Li | Min | 2009 | Columbia | Christ | | HEP |
| Bratt | Jonathan | 2009 | MIT | Negele | Sapling Learning | Cold NP |
| Billeter | Brian | 2010 | U Utah | DeTar | | HEP |
| Du | Xining | 2010 | Washington U St Louis | Bernard | EXA Corp. (software) | HEP |
| Hegde | Prasad | 2010 | Stony Brook | Karsch | Indian Institute of Science, Bangalore, India | Thermo |
| Li | Anyi | 2010 | University of Kentucky | Liu | IBM | Cold NP |
| Liu | Liuming | 2010 | William and Mary | Orginos | Bonn U, HISKP | Cold NP |
| Engelson | Eric | 2010 | U Maryland | Wallace | | Cold NP |
| Mankame | Devdatta | 2010 | University of Kentucky | Draper | | Cold NP |
| Schneible | Joe | 2010 | Syracuse | Catterall | | BSM |
| Zhou | Ran | 2010 | UConn | Blum | Xylinx (after postdocs at Indiana and Fermilab) | HEP |
| Wasem | Joseph | 2010 | University of Washington | Savage | LLNL | Cold NP |
| Syritysyn | Sergey | 2010 | MIT | Negele | Stony Brook (assistant professor) | Cold NP |
| Bouchard | Chris | 2011 | UIUC | El-Khadra | University of Glasgow (Lecturer) | HEP |
| Du | Daping | 2011 | Iowa | Meurice/Kronfeld | data science (after postdocs at UIUC and Syracuse) | HEP |
| Freeman | Walter | 2011 | University of Arizona | Toussaint | Syracuse | HEP |
| Joseph | Anosh | 2011 | Syracuse | Catterall | ICTS-TIFR, Bangalore (postdoc) | BSM |
| Neil | Ethan | 2011 | Yale | Fleming | CU Boulder (assistant prof) | BSM |
| Schaich | David | 2011 | Boston University | Rebbi | U. Bern (postdoc) | BSM |
| Shi | Zhifeng | 2011 | William and Mary | Detmold | | Cold NP |
| Lightman | Matthew | 2011 | Columbia | Christ | | HEP |
| Jin | Xiaoyong | 2011 | Columbia | Mawhinney | Argonne | BSM |
| Liu | Qi | 2012 | Columbia | Christ | | HEP |
| Chen | Chen | 2013 | Rensselaer Poly. Inst. | Giedt | Siemens PLC | BSM |
| Liu | Yuzhi | 2013 | Iowa | Meurice/Kronfeld | Indiana University (postdoc) | HEP, BSM |

USQCD PhDs, 2008-present (2)

| | | | | | | |
|-------------|--------------------|---------|--------------------------|------------------|--|--------------|
| Parikshit | Junnarkar | 2013 | U New Hampshire | Beane | Mainz | Cold NP |
| Qiu | Siwei | 2013 | U Utah | DeTar | NIH | HEP |
| Briceno | Raul | 2013 | University of Washington | Savage | JLab (Assist. Prof. ODU/JLab starting Fall 2017) | Cold NP |
| Green | Jeremy | 2013 | MIT | Negele | DESY, Berlin | Cold NP, HEP |
| Davoudi | Zoreh | 2014 | University of Washington | Savage | MIT (Assist. Prof. at UMD starting Fall 2017) | Cold NP |
| Cheng | Anqi | 2014 | CU Boulder | Hasenfratz | Rule14 (data science industry) | BSM |
| Li | Ruizi | 2014 | Indiana University | Gottlieb | Indiana University (postdoc) | HEP |
| Lin | Zhongjie | 2014 | Columbia | Christ | | Thermo |
| Yu | Jianglie | 2014 | Columbia | Christ | Google | HEP |
| Brown | Zachary | 2015 | William and Mary | Orginos | UnitedHealth Group, ECPI University | Cold NP |
| Chang | Chia Cheng (Jason) | 2015 | UIUC | El-Khadra | LBNL | HEP, Cold NP |
| Galvez | Richard | 2015 | Syracuse | Catterall | Vanderbilt | BSM |
| Komijani | Javad | 2015 | Washington U St Louis | Bernard | TUM, Munich (postdoc) -> Glasgow (postdoc) | HEP |
| Mastropas | Ekaterina | 2015 | William and Mary | Richards | | Cold NP |
| Petropoulos | Gregory | 2015 | CU Boulder | Hasenfratz | SecurityScorecard (data science industry) | BSM |
| Shultz | Christian | 2015 | Old Dominion U | Dudek | finance | Cold NP |
| Veernala | Aarti | 2015 | Syracuse | Catterall | Fermilab | BSM |
| Weinberg | Evan | 2015 | Boston University | Brower | BU Postdoctoral Fellow | BSM |
| Zhang | Daiqian | 2015 | Columbia | Christ | Google | HEP |
| Howarth | Dean | 2016 | Rensselaer Poly. Inst. | Giedt | Temple U. | Cold NP |
| Lee | Song-Haeng | 2016 | U Utah | DeTar | Synopsys Inc, Mountain View, CA (industry) | HEP |
| Sun | Mingyang | 2016 | University of Kentucky | Liu | Riverbed | Cold NP |
| Winterowd | Christopher | 2016 | U Utah | DeTar | U Kent (postdoc) | HEP |
| Jin | Luchang | 2016 | Columbia | Christ | BNL (postdoc), (A. Prof. UConn/RBRC 9/2017) | HEP, Cold NP |
| Gambhir | Arjun | 2017 | William and Mary | Orginos | LLNL/UC Berkeley (postdoc) | Cold NP |
| Meyer | Aaron | 2017 | Chicago | Hill/Kronfeld | BNL (postdoc) | HEP |
| Murphy | David | 2017 | Columbia | Mawhinney | | HEP, Cold NP |
| Sufian | Raza | 2017 | University of Kentucky | Liu | JLab | Cold NP |
| Wagman | Michael | 2017 | University of Washington | Savage | (Pappalardo Fellow at MIT starting 2017) | Cold NP |
| Gelzer | Zechariah | 2017 | Iowa | Meurice/Kronfeld | UIUC (postdoc) | HEP |
| Jay | William | 2018 | CU Boulder | Neil | Fermilab | BSM |
| Bassler | Scott | current | Syracuse | Laiho | Syracuse | BSM |
| Brown | Nathan | current | Washington U St Louis | Bernard | Washington U | HEP |
| Butt | Nouman | current | Syracuse | Catterall | Syracuse | BSM |

USQCD PhDs, 2008-present (3)

| | | | | | | |
|---------------|-------------|---------|--------------------------|------------|--|---------|
| Carosso | Andrea | current | CU Boulder | Hasenfratz | CU Boulder | BSM |
| Cheng | Tu | current | UConn | Blum | | HEP |
| Kusno | Adithia | current | William and Mary | Orginos | | Cold NP |
| Karpie | Joseph | current | William and Mary | Orginos | | Cold NP |
| Grebe | Anthony | current | MIT | Detmold | MIT | Cold NP |
| Hackett | Daniel | current | CU Boulder | DeGrand | CU Boulder | BSM |
| Hoying | Daniel | current | UConn | Blum | DOE Grad Student Fellowship at BNL (2017-2018) | HEP |
| Jha | Raghav | current | Syracuse | Catterall | Syracuse | BSM |
| Kanwar | Gurtej | current | MIT | Detmold | MIT | Cold NP |
| Rendon | Gumaro | current | U Arizona | Meinel | U Arizona | HEP |
| Steinbrecher | Patrick | current | BNL/Bielefeld | Karsch | BNL | Thermo |
| Wang | Gen | current | University of Kentucky | Liu | | Cold NP |
| Yamamoto | Shuhei | current | U Utah | DeTar | U Utah | HEP |
| Bai | Ziyuan | current | Columbia | Christ | | HEP |
| Wang | Bigeng | current | Columbia | Christ | | HEP |
| Wang | Tianle | current | Columbia | Christ | | HEP |
| Saenz | Jesus | current | NM State University | Engelhardt | | Cold NP |
| Radhakrishnan | Archana | current | William and Mary | Dudek | | Cold NP |
| Johnson | Christopher | current | William and Mary | Dudek | | Cold NP |
| Lin | Yin | current | Chicago | Kronfeld | | HEP |
| Klco | Natalie | current | University of Washington | Savage | | Cold NP |

How does SPC avoid COI

- All proposals clearly indicate co-PI-s.
- During SPC discussions, any SPC members that are co-PI-s of a specific proposal are not allowed to participate in discussions of that proposal.
- Votes (actual allocation) are taken from each member.
- During voting of allocations, an unbiased average of non-participating members is taken. This average is compared to a straight average from all SPC members. Discrepancies are reconciled among the committee. Votes/allocations may be recast.
- Final allocation usually based on unbiased average (although little difference from straight average by design of process)
- Anecdotal remark: have never observed significant discrepancy.

What criterion is used to decide full funding for proposals

- Proposals are classified according to the criterion they are to be evaluated: Type A or B.
- Type A: address critical needs of USQCD
 - Large requests we would expect from only long term, mature, well established projects. New projects requesting large amounts of time will receive very significant scrutiny and probably will not receive a large allocation
 - Large proposals are scrutinized significantly to ascertain whether they do address/achieve the goals of USQCD. Does the project have an established track record? Is the project sufficiently prepared to start the new set of calculations? Are publications coming out? What has been the scientific impact?
 - Ultimately, only a fixed amount of time is available. Long term projects requiring more than the available time will not fair well
- Type B: development
 - Upper bound to time (2.5M): threshold much lower. If a reasonable case is made, then full funding is very likely
 - Projects seeking a renewal are scrutinized to determine if progress is being made along with the potential for growth to type A

What feedback is given to PI-s after allocation

- Resources almost invariably over-subscribed
- This is the type of response for strong proposals:
 - ➔ *The study of light pseudoscalar physics, especially the $K \rightarrow \pi\pi$ decay, is important to the goals of the USQCD collaboration. Also, the SPC recognizes that this work, including the scale setting from the Omega mass and the quark mass tunings, is an essential part of your collaboration's physics program. However, the total resources needed by all of the important projects was considerably larger than the available resources, and we therefore cannot grant all of your request. The allocation listed above is the amount available for your project while balancing the needs of the entire collaboration.*
- Based upon complaints received by the SPC that not enough feedback was given to PI-s, the SPC now writes more extensive reports to the PI-s.
- Encouragement for future calculations were suggested: i.e.,
 - ➔ *As noted in our earlier comments, the SPC is very interested in seeing the $\Delta I = 1/2 K \rightarrow \pi\pi$ calculation move forward, although that is not part of the work proposed here.*
 - The SPC received a proposal for this work the next year
- We emphasize that significant critical (but constructive) criticism was given to several proposals (but not displayed here)