



# All Scientist Retreat: Introduction

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# What was the outcome of the Feb 7 All Scientist Retreat?

- A written report with Findings, Comments, and 28 Recommendations delivered to NSL
- We will work through these at future SAC meetings
- I expect that many of the recommendations will be implemented
- Thank you for making this a success

## Report on Feb 2017 All Scientist Retreat

Scientist Advisory Council: *John Campbell, Harry Cheung\*, Mary Convery, Laura Fields\*, Paddy Fox, Debbie Harris, Dan Hooper, Sergio Jindariani, Sam Posen, Kiyomi Seiya, Marcelle Soares-Santos, Erica Snider, Michelle Stancari, Thomas Strauss, Sasha Valishev, Julie Whitmore\**.

### Introduction

On Feb 7th, 2017, the Fermilab Scientists Advisory Council (SAC) hosted an All Scientist Retreat focused on the subjects of scientist happiness and diversity and inclusion at the lab. Prior to the retreat, a survey on these subjects was sent to all laboratory scientists and research associates. A wide variety of opinions were expressed both at the retreat and in the survey. This document attempts to summarize the consensus of scientists in the cases where there was a consensus, and the recommendations of the SAC to laboratory management based on the opinions expressed in the survey and at the retreat.

The purpose of the retreat was to gather input from the broader scientific staff on how to attract, promote, retain, and incentivize the world-class scientists that Fermilab needs to flourish. Specifically, the survey and the retreat addressed the following topics:

- Scientist research fractions
- Scientist internal and external recognition
- Balance between postdocs and other scientist positions
- Meeting etiquette
- Laboratory diversity in recruitment, hiring, and retention

An online survey was sent out to all scientists (scientists, research associates, and applications physicists) one month before the retreat. A total of 210 responses to the survey were received with many, sometimes half of responders, writing in specific comments to questions. The 210 included two retired scientists and one guest scientist. A snapshot of all scientists on 31 October 2016 from FCSA totaled 323, so the survey was completed by about 64% of scientists. Although some people expressed a concern that the survey questions could lead to some bias in the statistics, the many specific comments that were received as part of the survey were very useful and unambiguous. The retreat was attended by approximately 200 scientists; The overlap between those attending the retreat and those that filled in the online survey is unknown.

At the retreat the ~200 scientists were broken up into 12 small discussion groups to encourage more discussion of the issues. Notes were recorded in each group. There was also a plenary session after the small group discussions where additional issues could be raised. The information used for this report comes from the online survey responses, as well as the information exchanged in the small group discussions and the plenary session.

\* co-chair    \*past-chair

# Goals of this retreat (mainly via the working groups)

- Get YOU to talk about YOUR views on the long-term plans for the laboratory's research program
- Collect input on interstitial/leveraged/symbiotic opportunities to enhance the Fermilab 10-year plan (pre-2026)
- Collect ideas on opportunities and challenges for the longer range outlook (post-2026)
- Facilitate communication between different groups at the lab related to long-term goals (e.g. for accelerator physicists to learn what HEP physicists are wanting to do and visa versa)

# Boundary conditions on the exercise

- Fermilab remains the primary HEP and accelerator lab of the U.S.
  - But ok to assume that non-DOE-HEP percentage of our budget grows
  - OK to assume that the definition of the scientific boundaries of HEP will widen
  - Good to assume more leveraging+partnerships with other labs, industry, foundations
- OK to be optimistic about technology development; less ok to be optimistic about multiple budget doubling
- Science targets should be exciting!

# The Future of U.S. Particle Physics

- **DOE HEP continues the implementation of the 2014 P5 global vision for particle physics**
  - Strong community support has been crucial to the successful implementation of the P5 strategy so far
  - Continued community support is necessary to maintain our momentum with the U.S. Administration and Congress
- **At an appropriate point, the strategy for U.S. particle physics will need to be reevaluated and updated**
  - Discoveries and results from upcoming experiments will impact the strategy for future investments
    - Next strategy should be informed by results from the 13-14 TeV run of the LHC, second generation dark matter experiments, precision muon experiments, and short- and long-baseline neutrino experiments
  - Further advance current R&D and planning activities conducted towards future projects (*e.g.*, high-field magnets, SRF cavities, CMB-Stage IV, and third generation dark matter)
  - Updated strategy for the future of particle physics should be available in time to guide next round of major investments
    - Guidance should be available as the current round of projects are being completed and the field seeks to make new investments
    - Updated strategy should incorporate results from current, ongoing studies of future collider initiatives by the international community





# Considerations for Updating U.S. Strategy

- **P5 report is making a significant impact in budget formulation & appropriation**
  - Some large, high-priority projects have not yet reached important milestones in the DOE Critical Decision or appropriations process
  - Current plan saturates DOE HEP project funding until ~FY 2024
  - FY17 House (\$823M) and Senate (\$833M) marks above President's Request (\$818M)
  - P5 called out in House bill "DOE Research and Innovation Act" (Jan 24, 2017; *next slide...*)
- **NSF pre-project MREFC planning for the HL-LHC ATLAS and CMS detector upgrades now in process**
  - Anticipate that the National Science Board may make decision to proceed in 2018 at the earliest, with construction appropriations beginning in 2020 at the earliest
- **Global vision of current P5 report is central to ongoing discussion with international partners**
  - Core part of building upon new bilateral U.S.-CERN agreement
  - International partnerships are still growing for LBNF/DUNE
- **Transition to new administration adds uncertainty to timeline**
  - Must share P5 vision with new elements of management before plan can continue to move forward
  - Launching too early an update of the P5 strategy would confound decision makers
- **Beginning the next planning process too early would risk undermining ongoing efforts to implement the strategy of the P5 report**
  - **Must avoid "decisional paralysis" until after the HL-LHC projects and LBNF/DUNE are baselined, resulting in strategy studies taking place in the 2020-2021 time frame**

# Timeline for Updating the U.S. Strategy

- The May 2014 P5 report was successful because it was well informed by the science community, including information from:
  - 2010 New Worlds, New Horizons in Astronomy and Astrophysics
  - 2012 Report of the Subcommittee on Future Projects of High Energy Physics (Japan)
  - 2013 European Strategy for Particle Physics Report
  - 2013 U.S. Particle Physics Community-driven “Snowmass” process
- From a DOE perspective, the appropriate timeline is:
  - 2018: Anticipated Japanese decision on ILC
  - 2018-20: New NAS Astronomy and Astrophysics Decadal Survey
  - 2019: Start of European Strategy for Particle Physics process
  - 2020: Release of updated European Strategy for Particle Physics
  - 2020: Begin process to update the 2013 “Snowmass” report
  - 2022: Release new P5 strategy report in time to inform FY 2024 budget
- U.S. community encouraged to work with international collaborators in developing other regional plans with a global vision for particle physics



# P5 Construction and Physics Timeline



- Legend:**
- *Approximate Construction* (Blue)
  - *Expected Physics* (Green)
  - *LBNF/DUNE physics under "Scenario B+"* (Red)

**New P5 Report Release (2022)**

**Budget Impact of new P5 Report (FY 2024)**



# Output of this retreat: beginnings

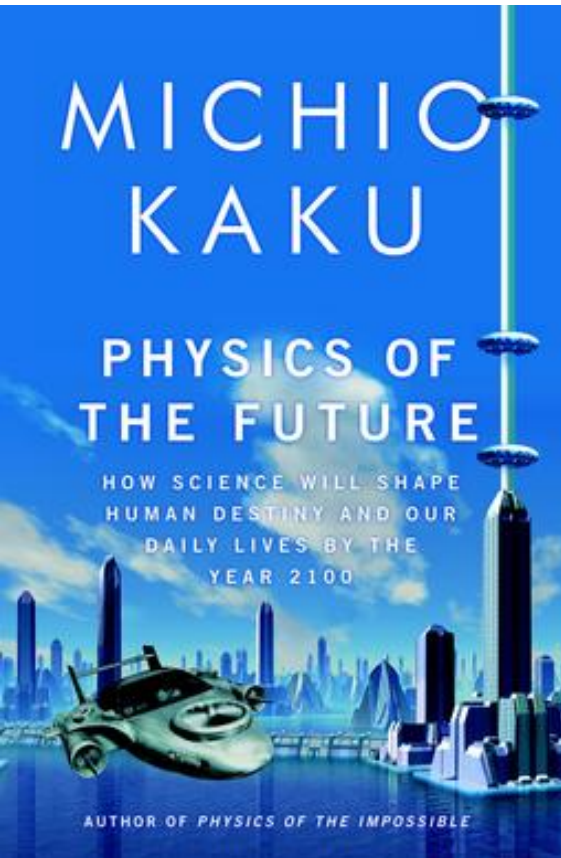
- Start of a schedule of events or work that needs to take place in order for Fermilab to give input to the next P5 process (~2021), including how to organize ourselves
- Start of a strategy for how to engage with the larger U.S. and international HEP community
- Start of a list of possible long-term lab goals
- Start of an estimate of what new work or input is needed to decide how to prioritize those goals (e.g. results from a currently running experiment, new R&D, etc)

We are here to brainstorm, **not** to make decisions, prioritize, or set limits

## Post-retreat next steps

- SAC to coordinate with working groups to produce a draft report
- Think about how to start engaging our user community for the next iteration – DPF meeting at Fermilab this August is a golden opportunity
- Think about how to align this strategic planning process with our LDRD program
- Get more organized on getting connected and informed about technology developments and science/mission overlaps in other communities

# Let's try to get a jump on the future, instead of the future getting a jump on us



## 10 Predictions About the Future That Should Scare the Hell Out of You



George Dvorsky

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**Any questions or comments on process?**