



Fermilab 2020 Strategic Planning Presentations

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What were the strategic planning presentations?

Fermilab: The Next Decade, the FY20 Strategic Planning Presentations took place last **Thursday, January 9 and Friday, January 10, 2020**. These were open sessions featuring presentations on each of the laboratory's strategic themes to which several committees and groups were invited.

The UEC received an invitation and I also attended on behalf of the Engineering Advisory Council.

I only made it to the Thursday sessions in person.

SharePoint site

- <https://fermipoint.fnal.gov/org/ocoo/ippm/spw/SitePages/FY%202020%20Strategic%20Planning%20Presentations.aspx>

AGENDA

Thu 9 Jan Strategic Planning Presentations

09:00-09:05	Introduction/Welcome - Nigel Lockyer, Convener: Tim Meyer
09:05-09:20	Vision for the Decade, Part I - Joe Lykken
09:20-09:40	Accelerator Science and Technology - Jonathan Jarvis
09:40-10:00	Collider Science - Sergo Jindariani
10:00-10:20	Cosmic Science - Lauren Hsu
10:20-10:40	Detectors for Science - Petra Merkel
10:40-11:00	<i>Break</i>
11:00-11:10	Outgoing Strategic Planning Group Leader Recognition - Tim Meyer
11:10-11:30	Neutrino Science - Anne Schukraft for Matt Touns
11:30-11:50	Precision Science - Karie Badgley

Fri 10 Jan Strategic Planning Presentations

09:00-09:05	Introduction/Welcome - Nigel Lockyer, Convener: Tim Meyer
09:05-09:20	Vision for the Decade, Part II - Joe Lykken
09:20-09:40	Artificial Intelligence - Nhan Tran
09:40-10:00	Computing for Science - Andrew Norman
10:00-10:20	Quantum Science and Technology - Anna Grassellino for Eric Holland
10:20-10:40	Infrastructure for Science - Tracy Lundin
10:40-11:00	<i>Break</i>
11:00-11:20	Laboratory Directed Research and Development (LDRD) - Bob Tschirhart
11:20-11:40	SAC and Long-term Strategic Planning - Brendan Kiburg

General Themes and my quick notes

Planning toward the future, looking at progress from the last times they met in 2015 and 2018

- **Joe Lykken: A vision for the next 10 years:** Fermilab Strategic goals for 2025, looking back at a slide presentation from 2015 (“Strategic 10-year planning workshop”):
 - various points of success with checkmarks... VIP visits always say “wow, you guys are amazing!”
- **Tim Meyer:** currently 5 years into trying to think 10 years out, going to hear from colleagues about accomplishment and what is thought possible

General Themes and my quick notes

- **Jonathan Jarvis :Accelerator Science and Technology** (author list should also include Jim Patrick)
 - various accomplishments in SRF: Q reduction of cavities, magnets
 - PIP-II charge: exploit PIP-II to its full potential, deliver multi MW on LBNF, a committee brought together
 - Booster, HP targetry accomplishments and problems, incl. new facility (at MI-8?)
 - MARS, Synergia: simulation; controls upgrade incl. upgrade to EPICs for beyond PIP-II proposed
 - IOTA/FAST, first results, optical stochastic cooling
 - USPAS and training the future
 - Q&A: Bob Tschirhart mentioned muon stuff (Joe L. had a checkmark)—beams on target inside SC magnet (not done before), muon development...think about resources and reaching out
 - Steve Brice asked about PIP-II
 - Nigel asked about wakefield accel. from other labs...Jonathan: some work at IOTA. Nigel: can you compare FACET-II with IOTA? Jonathan: pretty different, not an expert. Tim Meyer: where do we fit in with ILC? what's our strategy, evolving strengths. Jonathan: punted to Sergei B: decision now in Japan's hands. We could go a few different ways...supported by DOE in this, esp. wrt improved cavity gradients, cryomodules, etc. Ready to support Japan in making the ILC viable.

General Themes and my quick notes

- **Sergo Jindariani: Collider Science**

- P5 drivers, timeline of LHC and beyond
- mentioned various post-LHC colliders proposed in Asia etc.
- the science, also LDRDs related (incl. accel. control with AI)
- specifically called out postdoc/RA support, participation by jr. physicists in scientists retreat
- Theory too
- Q&A: Bob Tschirhart: Snowmass: why is there not a bullet for ILC case? Sergo: not trying to talk about a specific design, can't speak about the accelerator part. Not clear to him from a physics point of view we should be selecting a specific machine. Bob: surprising, ILC is the frontrunner/reality on the ground of readiness for future? Sergo: feasibility, funding, etc., many layers...Snowmass is working on it. Tim: this is one of the reasons why we have these workshops. Maybe a moment of opportunity to connect working groups. Also, good talking about succession, of individuals and lab

General Themes and my quick notes

- **Lauren Hsu: Cosmic Science**

- Various drivers: discover new ways to probe cosmos (tech. like skipper CCD), study dark matter
- NEXUS mentioned in MINOS, skipper CCDs again and proposed 10 kg experiment, ADMX
- recent accomplishments in improving limits etc.
- DES completed operations (still analyzing), DESI commissioning
- Accomplishments of DES and CMB
- Cosmic Steering Committee: planning, DOE and SAC liked it, have a 10 year plan incl. dark matter, surveys, CMB, astro theory, etc.
- Q&A: what does “keep an eye on” (accel. and LAr experts) mean? Josh Friedman: mentioned specific projects, ex. Dark Side

General Themes and my quick notes

- **Petra Merkel: Detectors for Science**
 - Detector Advisory Group, part of strategic planning process for IPPM, housed in PPD but works across ND and SCD too. Various specific R&D called out on slides.
 - Plastic scintillator R&D, test beam
 - Graphene
 - Skipper CCDs, etc.
 - 20 lab objectives proposed under 4 lab goals aligned with science frontiers, mostly ongoing but long-term for now
 - Q&A: Nigel: what about tech transfer? Petra: have done some, could do more, especially as we lose knowledge with retirements etc., gives us access to a greater workforce
 - Tim: thanks for showcasing applications to particle physics problems and also the bigger picture beyond
- Tim: recognition of Adam Lyon and Eric Godshalk's contributions

General Themes and my quick notes

- **Anne Schukraft: Neutrino Science**

- beamlines, goals, everything leads to DUNE
- pretty straightforward list of goals, etc.
- Q&A: Nigel: does the R&D overlap entirely with the other R&D mentioned? Anne: somewhat, obviously Petra's work goes beyond

- **Karie Badgley: Precision Science**

- IPPM defined, goals and objectives
- goals: delivering intense beam
- perform precise muon $g-2$ measurement
- perform highest sensitivity search for charged lepton flavor violation (complete Mu2e before long shutdown for LBNF/DUNE) (lots of calorimeter crystal already on site)
- plan next gen. of precision experiments at Fermilab, incl. Mu2e-II and non-muon campus ones
- Facilitate the growth of a strong and vibrant precision science user community (training mentioned)
- Improve theoretical SM and BSM predictions for Precision Science Observables (planning and re-org mentioned)