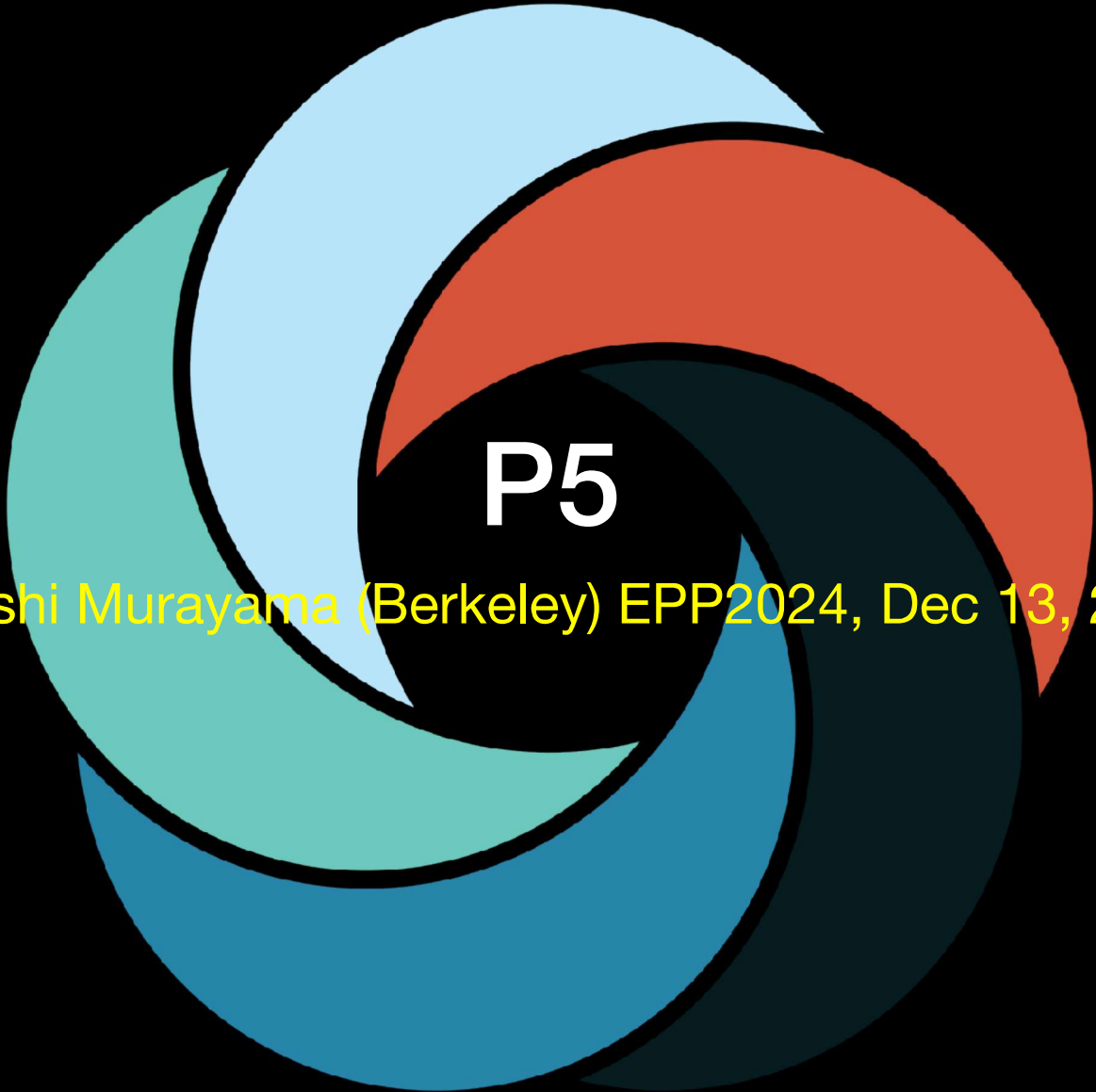




P5

Hitoshi Murayama (Berkeley) EPP2024, Dec 13, 2022

My take away from Snowmass

- We have an exciting program lined up
 - Thanks to Steve Ritz, previous P5, agencies!
- We are broader than energy, intensity, cosmic
- We are a forward-looking community
 - We need program beyond what the previous P5 outlined
 - We also need more freedom
 - better balance big, medium, small, projects vs research
- We deeply care about our community
 - Diversity, equity, inclusion, outreach, engagement
- Visited both DOE & NSF in early September
 - I'm still scared of the tasks ahead.
 - Reading Snowmass reports!



Last P5 science drivers

- Use the **Higgs boson** as a new tool for discovery
- Pursue the physics associated with **neutrino** mass
- Identify the new physics of **dark matter**
- Understand cosmic acceleration: **dark energy** and **inflation**
- Explore the **unknown**: new particles, interactions, and physical principles.
- Still very much true



Changing landscape

- 125 GeV Higgs does look like standard model
 - Previous P5: “Higgs as a new tool for discovery”
- Recognition that dark matter parameter space is *big*
 - Growing in interest in low-energy weakly coupled sector
- Λ CDM + inflation is the new Standard Model
 - But H_0 , σ_8 tension
 - Inflation vs swampland?
- DUNE moving ahead
 - Now Hyper-Kamiokande is also happening
- Lattice vs $g-2$?
- Interesting anomalies
- Gravitational wave! High-energy neutrinos!
- Now 10 frontiers (+costing frontier?)
- Quantum, AI/ML, new instrumentation, computing
- Field is more global than ever, yet geopolitical challenges, climate change



My first tasks

- Form the P5 committee that can respond to the charge
 1. Scientific excellence
 2. Broad representation of the community
 3. Forward-looking, young group
 4. International context
- A highly-nontrivial task
 - Worked with JoAnne, both DOE and NSF



U.S. DEPARTMENT OF
ENERGY

Office of
Science



Deputy Chair: Karsten Heeger

Yale University
2002 Ph.D. from UW Seattle
Chair, physics department
Director, Wright Laboratory
Focus on Neutrino experimental science
Served on HEPAP, NSAC, DPF executive committee
APS Committee on International Scientific Affairs
2015 Nuclear Physics Long Range Planning Study
US ATLAS project advisory group
Co-Chair of DPF CPAD (Coordinating Panel of
Advanced Detectors)
2003 APS Dissertation Award
DOE Outstanding Junior Investigator award
Sloan Fellowship, Kavli Fellow, APS Fellow
2016 Breakthrough Prize in Fundamental Physics as
a member of SNO, KamLAND and Daya Bay



Broad representation

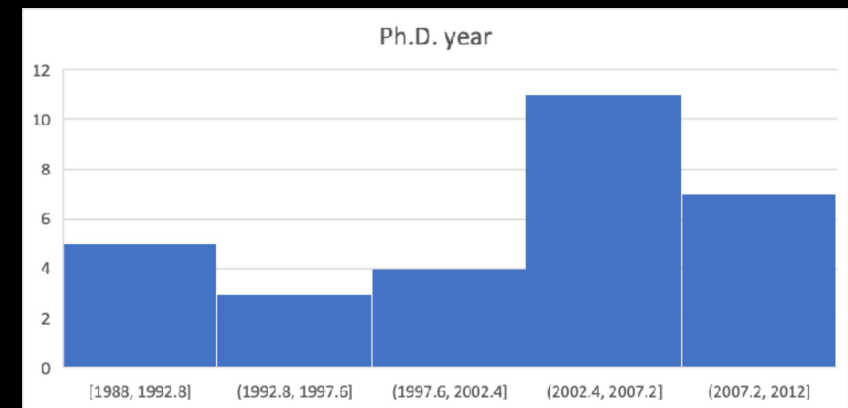
- Snowmass frontiers
 - Energy
 - Neutrino
 - Rare & precision
 - Cosmic
 - Theory
 - Accelerator
 - Instrumentation
 - Computational
 - Underground
 - Community
- Diversity
 - Geography
 - R1, R2, RUI





Tulika Bose	Wisconsin
Kyle Cranmer	Wisconsin
Francis-Yan Cyr-Racine	New Mexico
Sarah Demers	Yale
Cameron Geddes	LBNL
Patrick Huber	Virginia Tech
Kendall Mahn	Michigan State
Rachel Mandelbaum	Carnegie Mellon
Jelena Maricic	Hawaii
Petra Merkel	Fermilab
Christopher Monahan	William-Mary Coll.
Meenakshi Narain	Brown
Peter Onyisi	Texas Austin
Mark Palmer	Brookhaven
Tor Raubenheimer	SLAC
Mayly Sanchez	Florida State
Richard Schnee	South Dakota School of Mines and Technology
Jesse Thaler	MIT
Abigail Viereg	Chicago
Amanda Weinstein	Iowa State
Lindley Winslow	MIT
Tien-Tien Yu	Oregon
Bob Zwaska	Fermilab
Beate Heinemann	DESY
Christos Touramanis	Liverpool
Shoji Asai	Tokyo
Karsten Heeger	Yale
JoAnne Hewett	SLAC
Hitoshi Murayama	UC Berkeley/LBNL

5 EPSCOR states
R2, RUI institutions
14 female, 15 male
7 labs, 21 universities, 1 both
Both DOE & NSF support
Nobody “older” than HM & JLH
Average Ph.D. year 2001



Straw-person schedule

- 4 town halls: LBNL, Brookhaven, SLAC, Fermilab from January to April
- Virtual town halls, especially early career scientists
- 4 in person closed meetings from May to July
 - Make sure to build consensus
- Preliminary version in August
- Final report in October
- Probably need a sub-subpanel for cost and risk evaluations
- Followup with outreach to congress, other fields, public

Interface to EPP2024

- I was on EPP2024 until I was appointed as the P5 chair
- JoAnne and I participated in the recent November meeting
- Invited back again for the December meeting
- Will invite all EPP2024 members to P5 town halls to make sure we get the same inputs from the community
- Will keep informing EPP2024 about our progress and vice versa