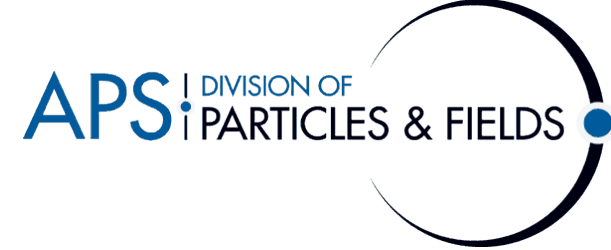


# Annual Report

*HEPAP Meeting  
30 November 2018  
Gaithersberg, MD*

# Standard DPF Activities



- APS Conferences and other interactions
  - Annual DPF portion of the APS April Meeting
  - Call for bids and selection of location for biannual DPF-only conference
  - Provide notices of conferences and workshops
  - Participation in APS Council, program committees etc.
- Awards, prizes and fellows
  - Calls for nominations for Awards, Prizes, Fellowships
  - Selection of committee members for Awards and Prizes

# New/special DPF Activities in 2018

- Preparation of a DPF contribution to the European Strategy for Particle Physics
  - Underway now with plan to submit on Dec 17<sup>th</sup>
- New DPF Newsletter:  
<https://www.aps.org/units/dpf/newsletters/index.cfm>
  - Started and maintained by Kate Scholberg (EC Secretary/Treasurer), Rick Van Kooten and Elizabeth Worcester, (EC Members-at-Large)
  - Monthly - to help to reduce email traffic to members
- Improving DPF April meetings
  - New Program Advisory Board formed and activated
  - Several steps taken to revamp and improve the meetings
- Snowmass studies
  - Last one was 2012-13 and next will start ~2021 of 2022

# Executive Committee 2018-19

\*Those finishing up in 2018 are *Italicized*. Those elected this year are **bold-faced**.

## ■ Chair line

- *Marcela Carena (2017)*
- *Jl (2018)*
- Priscilla Cushman (2019)
- Young-Kee Kim (2020)
- **Tao Han (2021)**

## ■ Councillor

- Elizabeth Simmons (2018-2021)

## ■ Secretary Treasurer

- *Kate Scholberg (2016-2018)*
- **Mirjam Cvetič (2019-2021)**

## • DPF Nominating Committee:

- Konstantin Matchev (chair) Manfred Paulini (vice chair), Martin Breidenbach, Chang K. Jung, Hank Sobel, Mariangela Lisanti

## ■ Members at Large

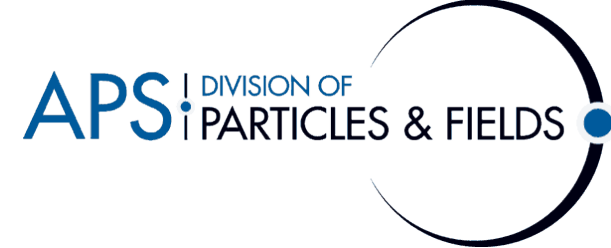
- *Aida El-Khadra (2016-2018)*
- *Joshua Klein (2016-2018)*
- Tulika Bose (2017-2019)
- Robert Tschirhart (2017-2019)
- Richard Van Kooten (2018-2020)
- Elizabeth Worcester (2018-2020)
- **André de Gouvêa (2019-2021)**
- **Natalia Toro (2019-2021)**

## ■ Early Career Member

- *Benjamin Carlson (2018)*
- **Fernanda Psihas (2019)**

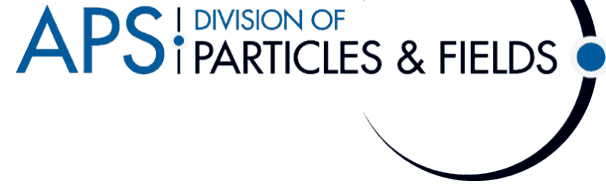
# Prizes and Awards

# Prizes & Awards: Winners



- **J. J. Sakurai Prize for Theoretical Particle Physics**
  - Lisa Randall (Harvard) and Raman Sundrum (Maryland, College Park)
- **Robert R. Wilson Prize for Physics of Particle Accelerators**
  - Toshiki Tajima (UC Irvine)
- **W.K.H. Panofsky Prize in Experimental Particle Physics**
  - Sheldon Stone (Syracuse)
- **Mitsuyoshi Tanaka Dissertation Award in Experimental Particle Physics**
  - Benjamin Brubaker (Yale)
- **J. J. and Noriko Sakurai Dissertation Award in Theoretical Particle Physics**
  - Nicholas L. Rodd (UC Berkeley)
- **APS DPF mentoring award**
  - Bonnie Fleming (Yale)
- **Henry Primakoff Award for Early-Career Particle Physics**
  - Nhan V Tran (Fermilab)
- **DPF Instrumentation Award**
  - Rinaldo Santonico (University of Rome)
- **DPF Instrumentation Early Career Award**
  - Javier Tiffenberg (Fermilab and U. Chicago)

# Prizes & Awards: Committees



- **J. J. Sakurai Prize for Theoretical Particle Physics**
  - Sally Dawson (chair), Michael Dine, Nima Arkani-Hamed, Zoltan Ligeti (vice chair)
- **Robert R. Wilson Prize for Physics of Particle Accelerators (DPF+DPB)**
  - Stuart Henderson (chair), Bill Barletta (vice chair), Pushpalatha Bhat, Sergey Belomestnykh, Alexander Chao
- **W.K.H. Panofsky Prize in Experimental Particle Physics**
  - Bonnie Fleming (Chair), Meenashki Narain, Myron Campbell (vice chair) Mirjam Cvetič, Larry Sulak
- **Mitsuyoshi Tanaka Dissertation Award in Experimental Particle Physics**
  - A Goussiou, Darien Wood, Paolo Privitera, Nathan Jurik, Georgia Karagiorgi, Chris Rogan (chair)
- **J. J. and Noriko Sakurai Dissertation Award in Theoretical Particle Physics**
  - Shufang Su (Chair), Graciela Gelmini, Andere Luiz de Gouvea (vice-chair), Leonardo Restelli, Grant Remmen
- **APS DPF mentoring award**
  - Jim Alexander (chair), Robin Erbacher, Karsten Heeger, Mirjam Cvetič (vice chair)
- **Henry Primakoff Award for Early-Career Particle Physics**
  - Bogdan Dobrescu (chair), Doreen Wackerroth (vice chair) Cecilia Gerber, Masahiro Mouri, Donna Naples Eric Dahl
- **DPF Instrumentation Award and Early Career Award (DPF+CPAD)**
  - Petra Merkel (chair), Abe Seiden, Hong Ma, Tim Nelson, Lawrence R. Sulak, Blair N. Ratcliff

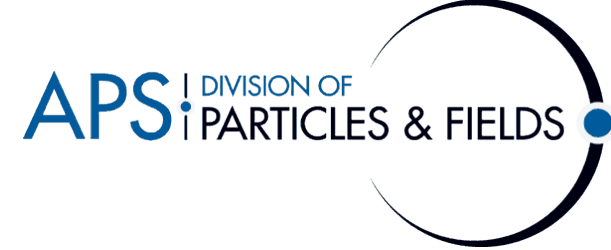
# New APS Fellows

- Kerstin A. Borrás, (DESY / RWTH Aachen University)
- Henriette D. Elvang, (University of Michigan)
- Robin D. Erbacher, (UC Davis)
- Taku Izubuchi, (BNL)
- Donna Naples, (University of Pittsburgh)
- Mark J. Oreglia, (University of Chicago)
- Paul Padley, (Rice University)
- David P. Saltzberg, (UCLA)
- Marcus Spradlin, (Brown University)
- LianTao Wang, (U Chicago)
- Jure Zupan, (University of Cincinnati)



# APS April Meeting

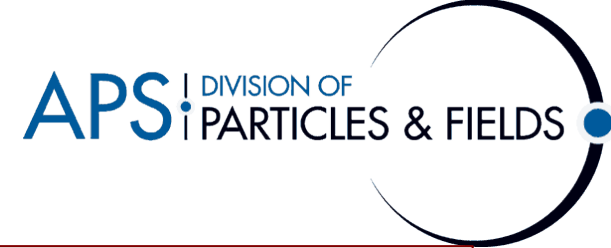
# About the April Meeting



- DPF is fundamentally international
  - So the APS meetings compete with a large number of HEP conferences in general, and APS April meeting follows the major winter conferences
- Meanwhile it's very important to DAP
  - Those areas of DPF that are mostly closely related do well.
- Also to DNP
  - Both the March and April meetings provide career and physics connections among DNP sub-fields and to other divisions.
- 2013 APS task force on April Meeting
  - Multi-divisional task force made proposals to improve attendance, particularly by DPF members. These proposals turned out to be ... impractical.
- DPF Program committee formed 2017
  - By Priscilla Cushman (DPF chair 2019) to help organize and improve the April meeting
  - Has turned out to be a key resource for 2018 and has been continued by Young-Kee Kim (DPF Chair 2020) for APS 2019

# DPF Program Committee

*(established Nov. 2017)*

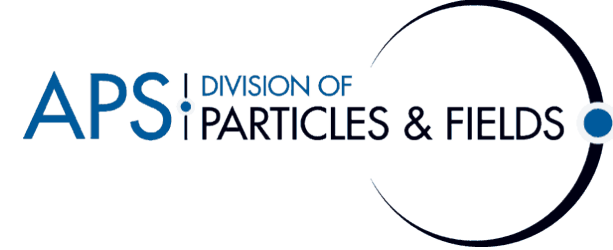


|               |                |                  |               |
|---------------|----------------|------------------|---------------|
| Bob Bernstein | Sheldon Stone  | Tom Browder      | Mike Kordosky |
| Mayly Sanchez | Matt Graham    | Matthew Szydagis | Rafael Lang   |
| Jodi Cooley   | Tom Diehl      | Stefano Profumo  | Tim Tait      |
| Roger Rusack  | Chris Hill     | Stephen Sekula   | Mayda Velasco |
| Jim Olsen     | Dmitri Denisov |                  |               |

Ex officio: DPF member in chair line to APS April Meeting Organization: Tao Han  
DPF Vice-chair: Young Kee Kim, DPF chair elect: Priscilla Cushman

- Strive for a good representation of all HEP sub-fields
- **Term of office: 3 years, staggered (1/3 rotate off every year)**
  - There is no formal election.
  - Nomination procedure: replace via suggestions from outgoing members and others in the relevant sub-fields

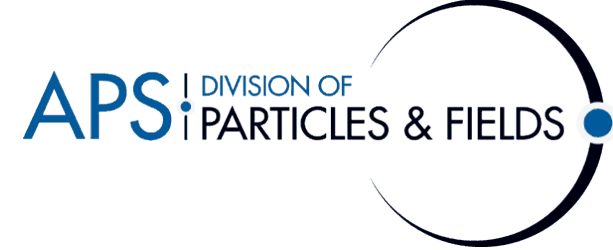
# DPF PC Mission



- Primary Mission
  - Provide Institutional Memory with regard to the April Meeting
  - Communicate organizational matters to the rest of DPF
  - Aid in the selection and planning of the biennial DPF Divisional Meeting
  - Aid the Vice Chair to produce the best program for DPF at the April Meeting
    - Review and revise sorting categories (for the abstracts) every Spring
    - Define a set of mini-symposia and focus talks and find speakers
    - Identify relevant Invited Talk sessions and find speakers
    - Target cross disciplinary topics (communicate with other Program Committees)
  - Send sorters to the sorting meeting
  - Provide Chairs for the meeting
  
- Secondary Mission (designated jobs and sub-committees)
  - Improve quality and relevance of April meeting (and APS) to DPF
  - Better utilization of APS resources: (social media, web presence, public policy, outreach)
  - Resource for Snowmass planning

# 2019 APS April Meeting\*

(April 13-16, Denver)



- Fostering interconnections
  - Invited sessions (finalized):
    - 10 sessions: jointly with DPB, DNP, DAP, and FHP (Forum of the History of Physics)
    - 5 sessions: DPF alone
- Students to give talks to bigger audience
  - Grad Slam at the end of mini symposia
- DPF community-wide discussions
  - Town Hall meeting to discuss the scope, timeline, and format of Snowmass: 5-7 pm on Saturday, April 13

\* DPF part of 2019 APS April meeting organized by Young-Kee Kim (DPF Chair 2020)

# DPF Contribution to the European Strategy

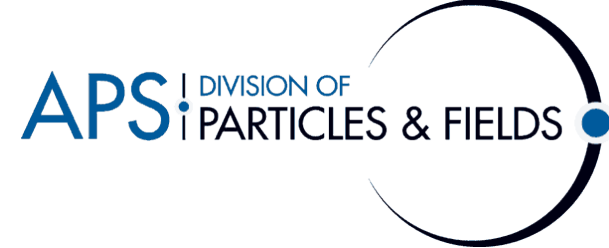
## ■ European Strategy Group

- The European particle physics community is preparing its updated strategy.
- The formal opening of the process will begin with appointments of two groups by the CERN Council in September 2018: the European Strategy Group (ESG) will establish the updated draft of the strategy and the Physics Preparatory Group (PPG) will prepare the scientific contribution to the work of the ESG via the "Briefing Book", which is based on the input it gathers from the world-wide community.
- Marcela Carena (DPF Chair 2017) will be the on representative from the Americas who will serve on the PPG.
- CERN Council aims to adopt an updated strategy in May 2020.

- **Call for US community input to be the DPF submission to the European Strategy Group**
  - The APS DPF will make a contribution to the European Strategy Group (ESG) process described just below.
  - This is a call to the US particle physics community to provide input to be considered for inclusion in a white paper from the DPF to the ESG that is consistent with US priorities as specified in the [2014 P5 report](#).
  - The DPF contribution will be succinct, with a goal of roughly 1-3 pages for each of 9 categories listed below.
  - **Please email your submission to the DPF at [dpfstrategy@fnal.gov](mailto:dpfstrategy@fnal.gov) with the appropriate category name and number in the subject line.**



# DPF Contribution to ESG: Categories and co-editors



Lead Editors: Kate Scholberg,  
Elizabeth Worcester, DPF chair-line

- The 9 topical categories

1) Use of the Higgs boson as a tool  
for further inquiry

- Theory: Sally Dawson
- Experiment: Markus Klute

2) Investigation of the physics of  
neutrino mass

- Theory: Andre de Gouvea
- Experiment: Sam Zeller

3) Investigation of the physics of dark  
matter

- Theory: Rouven Essig
- Experiment: Prisca Cushman

4) Investigation of the physics of dark  
energy and cosmic inflation

- Theory: Scott Dodelson
- Experiment: Bhuv Jain

5) Exploration of new particles,  
interactions, and physics  
principles

- Theory: Bogdan Dobrescu
- Experiment: Zachary Marshall

6) Future accelerators

- Theory: Tao Han
- Experiment: Meenakshi Narain
- Machine: Vladimir Shiltsev

7) Computing

- Oliver Gutsche
- David Miller

8) Detector R&D

- Ron Lipton
- Kim Palladino

9) Other

# Contribution to ESG: timeline

## Initial Timeline

*The timeline for the DPF whitepaper is summarized here:*

| Dates in 2018                                       | Process   |
|---|---|
| Until October 8 <sup>th</sup>                       | Collect input from the US DPF community via email at <a href="mailto:dpfstrategy@fnal.gov">dpfstrategy@fnal.gov</a> |
| October 9 <sup>th</sup> -November 11 <sup>th</sup>  | Draft white paper   |
| November 12 <sup>th</sup> -December 2 <sup>nd</sup> | Post the draft for feedback from the DPF community  |
| December 3 <sup>rd</sup> -December 16 <sup>th</sup> | Finalize the draft  |
| December 17 <sup>th</sup>                           | <b>Submit paper to and post it on the DPF bulletin site</b>   |

The new deadline for feedback from the community is Dec. 11<sup>th</sup>

# APS Division of Particles and Fields Response to European Strategy Group Call for White Papers

November 14, 2018

## Abstract

This white paper summarizes the U.S. particle physics community activities and the community strategic planning process organized by DPF.

## 1 U.S. community planning for particle physics

The American Physical Society (APS) Division of Particles and Fields (DPF) drives the U.S. particle physics community planning process, and connects to a broader international community. The analogous process to the community input stage of the European Strategy Group process in the U.S. is the "Snowmass" community planning exercise, which is organized by DPF. The Snowmass activities take place every 5-10 years, and the resulting study documents serve as input to the funding agency prioritization process. The most recent Snowmass was a  $\sim$ year-long process, involving multiple preparatory meetings and culminating in a several-week-long meeting in summer 2013. The proceedings comprised an extensive description of physics activities and plans over many subfields [R<sup>+</sup>14b]. The Snowmass exercise does not explicitly prioritize; rather, it aims to describe aspirations. Its output is intended to represent a community consensus on preferred physics directions.

The output of the 2013 Snowmass served as input to the Particle Physics Project Prioritization Panel (P5) in 2013-2014. P5 is a subpanel of the High Energy Physics Advisory Panel (HEPAP) charged with explicit prioritization of proposed projects, subject to specified funding constraints. The P5 report [R<sup>+</sup>14a], "Building for Discovery: Strategic Plan for U.S. Particle Physics in the Global Context," provided recommendations to the funding agencies (Department of Energy Office of Science and the National Science Foundation). This report was very well received by community and the agencies, and its recommendations have been closely followed.

P5 summarized the Snowmass inputs into five "intertwined science Drivers" for the field:

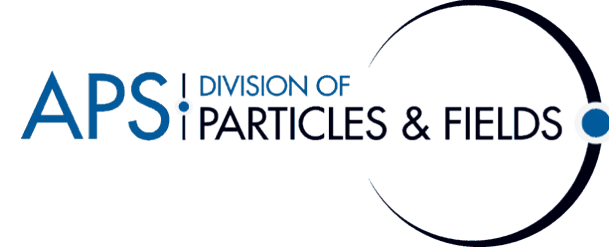
- Use the Higgs boson as a new tool for discovery
- Pursue the physics associated with neutrino mass
- Identify the new physics of dark matter
- Understand cosmic acceleration: dark energy and inflation
- Explore the unknown: new particles, interactions, and physical principles.

# Contribution to ESG: Status

- Oct. 8th deadline
  - Relatively little (but very good) input.
  - Co-editors were then charged with writing section drafts, obtaining help from other experts in field, reading and commenting on each other's sections.
- Posted rough [first draft](#) November 16<sup>th</sup> (4 days late)
  - Deadline for comments Dec. 11<sup>th</sup>
  - Much more robust community response, as expected!
  - Now going through the comments and preparing a second draft.
- Next steps
  - DPF Exec committee meets this afternoon to discuss how we want to structure the final draft
    - It is 20 pages total, and the limit is 10 pages, so we will either reduce it to 10 (more impact but politically difficult) or break it into two parts.
    - If we can get a good draft together in the next week, we will post it again to give the community another opportunity to comment.
  - Plan to finalize it on the weekend of the 14<sup>th</sup> and submit on Monday the 17<sup>th</sup> of December

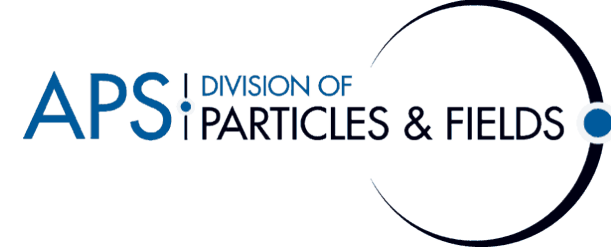
**MORE INFORMATION**

# Improving the April Meeting: Background



- 2013 APS task force on April Meeting attendance
  - DNP, DAP, DPB, DPF involvement. Chaired by Tim Gay (DAP).
- Finding:
  - April is bad for DPF because new results are shown at March/Summer conferences
- First proposed solution:
  - Move meeting to October and have it in Washington DC
    - Not acted on because DNP has a major November meeting at a DC Location every other year.
- Second proposed solution:
  - Combine April and March meetings
    - This was initiated with the intention of having the first such meeting in 2019 in Boston.
    - Idea was dropped because the meeting would be too big.

# DPF Program Committee



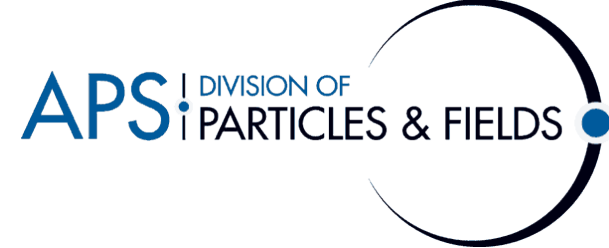
- Currently, the vice-chair is responsible for organization of DPF sessions at the April Meeting.
  - Often not in the email loop until September
  - Needs to choose Invited Speakers by October
  - Sorting categories not updated for a decade (that happens in June)
  - No DPF initiated mini-symposia (invited talk + parallel)
- Program Committee provides Institutional Memory and the means to improve the program
  - Representatives from sub-fields
  - Help make better sorting categories for initial abstract submission
  - Good selection of invited talks with the most exciting new physics
  - New mini-symposia and focus sessions
  - Provide experienced sorters for the sorting meeting in January
  - Involve a larger cross section of DPF in the April Meeting planning



- Statement from the Program Committee's analysis of the issues
  - APS April's unique values are (1) fostering interconnections, especially with DNP, DAP, and DPB and (2) providing opportunities for students and early career physicists to give conference talks.
  - If we focus on the above, then the April APS meeting will never be seen as a "must-go" conference to certain segments of DPF in a period of highly constrained budgets and a crowded set of international conferences.
  - If it attempts to compete with the European conferences, ICHEP, the large number of neutrino conferences, etc., APS April may be so diluted it will provide neither of its unique values.



# Improving the April Meeting:



## Other Constraints

- Plenary and Public Talks are the only ones not in parallel
- Invited Talks: 36 min each, 3 per session
  - decided in October of the year before
  - DPF has 10 sessions to fill. 3 talks per session
- Contributed Talks: 12 min each, 9 per session
  - initiated by abstract submission
  - all abstracts must be accepted, but we can move some to posters
- Disadvantages: Spreads attendance thinly over (some) sessions
  - Even for Invited talks !
  - Miss a lot of the ones you want to see.
- Advantages:
  - Rigidity keeps the program synchronous across fields
  - Maximizes opportunities for talks
    - (people cannot afford to come to a conference without a talk)