



Division of Particles & Fields

Snowmass 2021: The Community Planning Exercise

Tao Han

University of Pittsburgh

On behalf of the Snowmass Steering Group

54th Fermilab Users (Virtual) Meeting
New Horizons of Our Community
August 2 - 6, 2021

Highlight leading-edge science, celebrate Fermilab's achievements and look to our future as a community

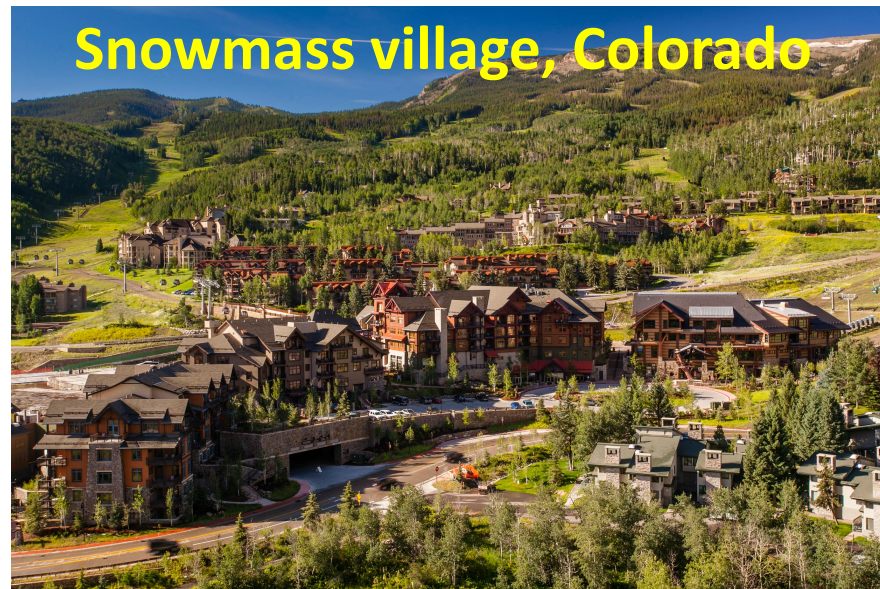
Dynamic keynote address • Exciting talks • Future of HEP by Snowmass panel
Fun virtual poster session • Conversations on equity, diversity and inclusion

ALL community members (including non-Users) are welcome!
Please register as soon as possible at:

<https://indico.fnal.gov/e/UAM2021>

The poster features a photograph of the Fermilab building with a row of international flags in the foreground. At the bottom, there are logos for Fermilab, U.S. DEPARTMENT OF ENERGY Office of Science, Fermilab Research Alliance LLC, Fermilab UEC, and URA.

Snowmass



In June 28 - July 16, 1982, the APS DPF organized an workshop, to “assess the future of elementary particle physics, to explore the limits of our technological capabilities, and to consider the nature of future major facilities for particle physics in the US.”

DPF Chair Charles Baltay:

“In some ways, the 1982 DPF Summer Study represents a new departure in the field of particle physics. In the past, studies were typically held by the large laboratories to address problems specific to that particular laboratory. The 1982 DPF Summer Study was the first attempt in recent years to bring together physicists from the whole country to consider the future of our field from the point of view of the best overall national program. The DPF Executive Committee feels that this summer study was sufficiently useful in this last respect to hold similar summer studies at appropriate times in future years.” **This spearheaded the SSC. The tradition continued.**

Global-scale projects require long-term strategic plans

With year-long, wide community efforts,

Snowmass on the Mississippi
July 29 – August 6, 2013

(~700 participants)



Snowmass 2013 highly successful:

(Report by December 2013)

<https://www.slac.stanford.edu/econf/C1307292/>

The year-long process laid out a roadmap
for great science opportunities,
resulted in broad community buy-in.

essential inputs to P5



**“Particle Physics Project Prioritization Panel”
(P5)**

A subpanel of HEPAP

Building for Discovery

Strategic Plan for U.S. Particle Physics in the Global Context

Distilled from the Snowmass 2013 inputs, five 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.
 - 29 recommendations
 - Projects prioritized according to funding scenarios

As a result, highly impactful on the

- Directions/achievements in HEP
- Federal funding profile

for the current and near-future projects in the decade.



The need for Snowmass 2021

Snowmass Goals: **Snowmass is a scientific study**

To define the most important questions for the field of particle physics

To identify promising opportunities to address them

- **Timing:** 2014 P5 recommendations are being favorably carried out, and it is time to embark the next strategic plan: 2023 – 2025.
 - **Related US domestic programs:**
 - NAS Decadal survey on Astronomy & Astrophysics (2020)
 - NAS Decadal Survey of Elementary Particle Physics (2021)
 - **Global programs:**
 - 2017 JAHEP/KEK Roadmap: SuperKEKB; J-PARC; Hyper-K; ILC ...
 - 2020 Update of European Strategy for Particle Physics
 - Latin America: Strategy Forum for Research Infrastructure

Snowmass 2021 organization

Steering Group 2021

Chair: Tao Han

Chair-elect: Joel Butler

Vice Chair: Sekhar Chivukula

Past Chair: Young-Kee Kim

Ex Officio: Prisca Cushman

DPB: Sergei Nagaitsev
DNP: Yury Kolomensky
DAP: Glennys Farrar
DGRAV: Nicolas Yunes

Advisory Group 2021

- DPF Executive Committee
 - Secretary/Treasurer: Mirjam Cvetič
 - Councilor: Elizabeth Simmons
 - Member-at-Large: Natalia Toro
 - Member-at-Large: Andre de Gouvea
 - Member-at-Large: Mary Bishai
 - Member-at-Large: Lauren Tompkins
 - Member-at-Large: Mayly Sanchez
 - Member-at-Large: Gordon Watts
 - Early Career Member: Julia Gonski
- Editor and Communication
 - Editor – Michael Peskin
 - Communication – Bob Bernstein
- Representatives from the Int. Community
 - Africa / Middle East
 - Azwinndini Muronga, Nelson Mandela Metropolitan Univ, South Africa
 - Asia / Pacific
 - Atsuko Ichikawa, Kyoto University, Japan
 - Xinchou Lou, IHEP, China
 - Canada
 - Heather Logan, Carleton University
 - Europe / Russia
 - Val Gibson, Cavendish Laboratory, UK
 - Berrie Giebels, CNRS, France
 - Latin America
 - Claudio Dib, Universidad Tecnica Federico Santa Maria, Chile

Snowmass 2021 organization

10 Frontiers	80 Topical Groups
Energy Frontier	Higgs Boson properties and couplings, Higgs Boson as a portal to new physics, Heavy flavor and top quark physics, EW Precision Phys. & constraining new phys., Precision QCD, Hadronic structure and forward QCD, Heavy Ions, Model specific explorations, More general explorations, Dark Matter at colliders
Frontiers in Neutrino Physics	Neutrino Oscillations, Sterile Neutrinos, Beyond the SM, Neutrinos from Natural Sources, Neutrino Properties, Neutrino Cross Sections, Nuclear Safeguards and Other Applications, Theory of Neutrino Physics, Natural Neutrino Sources, Neutrino Detectors
Frontiers in Rare Processes & Precision Measurements	Weak Decays of b and c, Strange and Light Quarks, Fundamental Physics and Symmetries, Lepton Number Violation, Charged Lepton Flavor Violation, Dark Sector at Low Energy
Cosmic Frontier	Dark Matter: Particle-like, Dark Matter: Wave-like, Dark Matter: Other Possibilities, Cosmic Acceleration: The Modern Universe, Dark Energy & Cosmic Acceleration, Cosmic Acceleration: Probes & Cosmic Acceleration: Complementarity of Probes and New Facilities
Theory Frontier	String theory, quantum gravity, black holes, Quantum Field Theory, CFT and formal QFT, Scattering amplitudes, Lattice gauge theory, Theory of Neutrino Physics, Particle phenomenology, BSM model building, Astro-particle physics and cosmology, Theory of Neutrino Physics
Accelerator Frontier	Beam Physics, Accelerators for Neutrinos, Accelerators for Electroweak and Higgs Physics, Multi-scale Accelerators Beyond Colliders & Rare Processes, Advanced Accelerator Concepts, Magnets, Targets/Sources
Instrumentation Frontier	Detectors, Solid State Detectors & Tracking, Trigger and DAQ, Micro Pattern Gas Detectors, Electronics/ASICS, Noble Elements, Cross Cutting and System Integration, Radio Detection
Computational Frontier	Computational Algorithm Parallelization, Theoretical Calculations and Simulation, Machine Learning, Storage and processing resource access (Facility and Infrastructure R&D), End user analysis
Underground Facilities and Infrastructure Frontier	Underground Facilities for Neutrinos, Underground Facilities for Cosmic Frontier, Underground Detectors
Community Engagement Frontier	Applications & Industry, Career Pipeline & Development, Diversity & Inclusion, Physics Education, Public Education & Outreach, Public Policy & Government Engagement

30 Frontier conveners, ~250 Topical Group conveners, >40 Inter-Frontier Liaisons, ~25 Early Career Liaisons.

Snowmass Early Career

to represent early career members and promote their engagement in the Snowmass 2021 process; to build a long-term HEP early career community

Broad coverage/connection in science and global community !

Snowmass 2021 activities

- Communication platform: Wiki <https://snowmass21.org/>



- Welcome page
- Announcements
- Snowmass Calendar
- Ethics Guidelines
- Snowmass Report

Organization

- Snowmass Steering Group
- Snowmass Advisory Group
- Frontier Conveners
- APS DPF Snowmass page
- Snowmass Early Career

Snowmass Frontiers

- Energy Frontier
- Neutrino Physics Frontier
- Rare Processes and Precision
- Cosmic Frontier
- Theory Frontier
- Accelerator Frontier
- Instrumentation Frontier
- Computational Frontier
- Underground Facilities
- Community Engagement

SnowMass2021

Welcome to Snowmass

Because of the COVID-19 pandemic, the Snowmass Report and the Community Summer Study (CSS) meeting will be delayed by one year and the overall schedule for the Snowmass process will be adjusted accordingly. See [more information and update here](#).

The Particle Physics Community Planning Exercise (a.k.a. "Snowmass") is organized by the Division of Particles and Fields (DPF) of the American Physical Society. Snowmass is a scientific study. It provides an opportunity for the entire particle physics community to come together to identify and document a scientific vision for the future of particle physics in the U.S. and its international partners. Snowmass will define the most important questions for the field of particle physics and identify promising opportunities to address them. (Learn more about the history and spirit of Snowmass here "[How to Snowmass](#)" written by [Chris Quigg](#)). The P5, Particle Physics Project Prioritization Panel, will take the scientific input from Snowmass and develop a strategic plan for U.S. particle physics that can be executed over a 10 year timescale, in the context of a 20-year global vision for the field.

-Table of Contents

- [Welcome to Snowmass](#)
 - [DPF Community Planning Process](#)
 - [News Highlight](#)
 - [Organization](#)
 - [Code of Conduct](#)
 - [Contact us](#)
 - [Join Slack workspace and Snowmass email list!](#)

← Please sign up on email list of the frontiers of your interests

Snowmass 2021 activities

- Communication platform: SLACK Channel <https://app.slack.com>

snowmass2021 # general <https://snowmass21.org/> 3,924

Saturday, July 17th

Tao Han 11:13 AM
Hi everyone: Please see the Snowmass update at the Town Hall Meeting at DPF 21.

PDF

SnowmassUpdate.pdf
21 MB PDF

APS physics Division of Particles & Fields

Town Hall Meeting @ DPF 21

July 14, 2021
Tao Han
University of Pittsburgh
On behalf of the DPF Executive Committee
& the Snowmass Steering Group

snowmass2021 # snowmass-young Snowmass early career community 644

Monday, July 5th

Julia Gonski 10:16 AM
Hi all!! If you're registered for the virtual DPF 2021 meeting next week, the organizers are looking for early career physicists to help chair the various parallel sessions. Please find the session schedule [here](#), along with a [sign up spreadsheet](#). Add your name to any available slot if you want to participate! (If you're not registered and want to be, you have [until July 10!](#))
thanks, Julia

Indico
2021 Meeting of the Division of Particles and Fields of the American Physical Society (DPF21)
Registration deadline is July 10, 2021. Abstract submission is now closed. We are no longer accepting new abstracts. The Program Committee will be reviewing abstracts and notifying speakers by Weds. June 30.

Indico

Accelerator Frontier

Co-Conveners

AF activities include discussions on high-energy hadron and lepton colliders, high-intensity beams for neutrino research and for the “Physics Beyond Colliders”, accelerator technologies, science, education and outreach.



Steve Gourlay
(LBNL)



Tor Raubenheimer
(SLAC)



Vladimir Shiltsev
(FNAL)

Topical Group		Topical Group co-Conveners		
AF01	Beam Phys & Accel. Education	Z. Huang (Stanford)	M. Bei (GSI)	S. Lund (MSU)
AF02	Accelerators for Neutrinos	J. Galambos (ORNL)	B. Zwaska (FNAL)	G. Arduini (CERN)
AF03	Accelerators for EW/Higgs	M. Ross (SLAC)	Q. Qin (IHEP, Beijing)	Georg Hoffstaetter (Cornell)
AF04	Multi-TeV Colliders Jingyu Tang (IHEP)	M. Palmer (BNL)	A. Valishev (FNAL)	N. Pastrone (INFN, Torino)
AF05	Accelerators for PBC and Rare Processes	E. Prebys (UC Davis)	M. Lamont (CERN)	Richard Milner (MIT)
AF06	Advanced Accelerator Concepts	C. Geddes (LBNL)	M. Hogan (SLAC)	P. Musumeci (UCLA)
AF07	Accelerator Technology R&D			
	Sub-group RF	E. Nanny (SLAC)	S. Posen (FNAL)	H. Weise (DESY)
	Sub-Group Magnets	G. Sabbi (LBNL)	S. Zlobin (FNAL)	S. Izquierdo Bermudez (CERN)
	Sub-Group Targets/Sources	C. Barbier (ORNL)	Y. Sun (ANL)	F. Pellemoine (FNAL)

Implementation Task Force (ITF) established

Community Engagement Frontier

Co-Conveners:



Kétévi Assamagan
(BNL)



Breese Quinn
(Mississippi)

The objective is to improve and sustain strategic engagements with our communities in order to draw support for and strengthen the field of particle physics, while playing key roles in serving those communities.

Topical Group		Topical Group co-Conveners			
Comm01	Applications & Industry	Farah Fahim (FNAL)	Alex Murohk (RadiaBeam)	Koji Yoshimura (Okayama)	
Comm02	Career Pipeline & Development	Sudhir Malik (UPRM)	Julia Hogan (Bethel Univ.)	Aneliya Karadzhiniva-Ferrer (Ruđer Bošković Institute)	
Comm03	Diversity & Inclusion	Mu-Chun Chen (UCI)	Johan Bonilla (UC-Davis)	Carla Bonifazi (UFRJ)	Cindy Lin (SNOLAB)
Comm04	Physics Education	Randy Ruchti (Notre Dame)	Sudhir Malik (UPRM)	Sijbrand de Jong (Radboud)	
Comm05	Public Education & Outreach	Sarah Demers (Yale)	Kathryn Jepsen (SLAC)	Don Lincoln (FNAL/Notre Dame)	A. Muronga (Nelson Mandela)
Comm06	Public Policy and Government Engagement	Rob Fine (Rochester)	Louise Suter (FNAL)	Brajesh Choudhary (Delhi)	
Comm07	Environmental and Social impacts	Ken Bloom (Nebraska)	Véronique Boisvert (Royal Holloway)	Mike Headley (SDATA/SURF)	

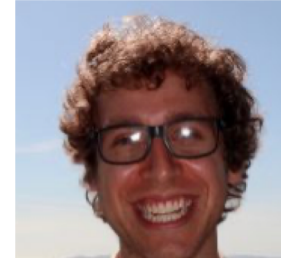
Computational Frontier

Co-Conveners

The Computational Frontier will assess the software and computing needs of the High Energy Physics community emphasizing common needs and common solutions across the frontiers.



Steven Gottlieb
(Indiana U.)



Ben Nachman
(LBNL)



Oliver Gutsche
(FNAL)

Topical Group		Topical Group co-Conveners		
CompF01	Experimental Algorithm Parallelization	Guiseppe Cerati (FNAL)	Katrin Heitmann (ANL)	Walter Hopkins (ANL)
CompF02	Theoretical Calculations and Simulation	Peter Boyle (BNL)	Daniel Elvira (FNAL)	Ji Qiang (LBNL)
CompF03	Machine Learning	Phiala Shanahan (MIT)	Kazu Terao (SLAC)	Daniel Whiteson (Irvine)
CompF04	Storage and processing resource access (Facility and Infrastructure R&D)	Wahid Bhimji (NERSC)	Rob Gardner (U Chicago)	Frank Würthwein (UCSD)
CompF05	End user analysis	Gavin Davies (U.Mississippi)	Peter Onyisi (U Texas at Austin)	Amy Roberts (UC Denver)
CompF06	Quantum computing	Travis Humble (ORNL)	Gabriel Perdue (FNAL)	Martin Savage (U Washington)
CompF07	Reinterpretation and long-term preservation of data and code	Kyle Cramner (NYU)	Mike Hildreth (U Notre Dame)	Matias Carrasco Kind (Illinois/ NCSA)

Cosmic Frontier

The Cosmic frontier includes probes of the fundamental nature of dark matter and dark energy, and opportunities using astrophysical and cosmological data to learn about fundamental physics.



Aaron Chou
(Fermilab)

Co-Conveners



Marcelle Soares-Santos
(U.Michigan)



Tim Tait
(UC Irvine)

Topical Group		Topical Group co-Conveners			
CF01	Particle DM	Jodi Cooley (SMU)	Tongyan Lin (UCSD)	Hugh Lippincott (UCSB)	Tracy Slatyer (MIT)
CF02	Wavelike DM	Joerg Jaeckel (Heidelberg)	Gray Rybka (UW)	Lindley Winslow (MIT)	
CF03	DM Astro Probes	Alex Drlica-Wagner (FNAL)	Chanda Prescod-Weinstein (NH)	Haibo Yu (Riverside)	
CF04	DE & CA The Modern Universe	Jeff Newman (Pittsburgh)		Anze Slosar (BNL)	
CF05	DE & CA Cosmic Dawn & Before	Clarence Chang (ANL)	Deirdre Shoemaker (Georgia Tech.)	Laura Newburgh (Yale)	
CF06	Dark Energy complementarity	David Schlegel (LBNL)	Brenna Flaugher (FNAL)		
CF07	Cosmic Probes	Luis Anchordoqui (CUNY)	B.S. Sathyaprakash (Penn State)	Rana Adhikari (CalTech)	Ke Fang (Wisconsin) Kirsten Tollefson (MSU)

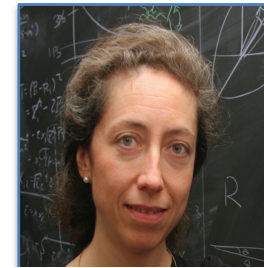
Energy Frontier

Co-Conveners

EF will explore the TeV energy scale and beyond. Our sharply focused agenda includes understanding the heaviest particles of the Standard Model (SM), as well as exploring physics beyond the SM to discover new particles and interactions, including unraveling the mystery of dark matter.



Meenakshi Narain
(Brown U)



Laura Reina
(FSU)



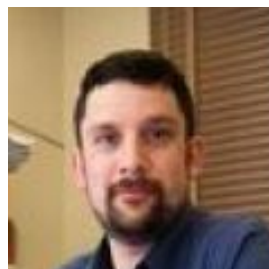
Alessandro Tricoli
(BNL)

Topical Group		Topical Group co-Conveners			
EF01	EW Physics	Higgs Boson properties and couplings	Sally Dawson (BNL)	Andrey Korytov (U Florida)	Caterina Vernieri (SLAC)
EF02		Higgs Boson as a portal to new physics	Patrick Meade (Stony Brook)	Isobel Ojalvo (Princeton)	
EF03		Heavy flavor and top quark physics	Reinhard Schwienhorst (MSU)	Doreen Wackerth (Buffalo)	
EF04		EW Precision Phys. & constraining new phys.	Alberto Belloni (Maryland)	Ayres Freitas (Pittsburgh)	Junping Tian (Tokyo)
EF05	QCD and Strong Interactions	Precision QCD	Michael Begel (BNL)	Stefan Hoeche (FNAL)	Michael Schmitt (NW)
EF06		Hadronic structure and forward QCD	Huey-Wen Lin (MSU)	Pavel Nadolsky (SMU)	Christophe Royon (Kansas)
EF07		Heavy Ions	Yen-Jie Lee (MIT)	Swagato Mukherjee (BNL)	
EF08	BSM	Model specific explorations	Jim Hirschauer (FNAL)	Elliott Lipeles (UPenn)	Nausheen Shah (Wayne State)
EF09		More general explorations	Tulika Bose (UW-Madison)	Zhen Liu (Maryland)	Simone Griso (LBL)
EF10		Dark Matter at colliders	Caterina Doglioni (Lund)	LianTao Wang (Chicago)	

Instrumentation Frontier

Co-Conveners

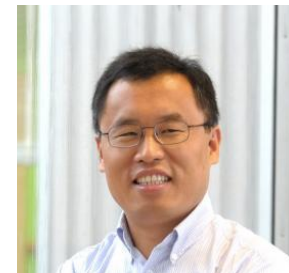
IF is geared to discussing detector technologies and R&D needed for future experiments in collider physics, neutrino physics, intensity physics and at the cosmic frontier.



Phil Barbeau
(Duke)



Petra Merkel
(FNAL)



Jinlong Zhang
(ANL)

Topical Group		Topical Group co-Conveners		
IF01	Quantum Sensors	Thomas Cecil (ANL), Kent Irwin (SLAC), Reina Maruyama (Yale), Matt Pyle (Berkeley)		
IF02	Photon Detectors	Juan Estrada (FNAL)	Mayly Sanchez (ISU)	Abigail Vieregge (Chicago)
IF03	Solid State Detectors&Tracking	Tony Affolder (UCSC)	Artur Apresyan (FNAL)	Lucie Linssen (CERN)
IF04	Trigger and DAQ	Darin Acosta (Florida)	Wes Ketchum (FNAL)	Stephanie Majewski (Oregon)
IF05	Micro Pattern Gas Detectors	Thomas Schwarz (Michigan)	Maxim Titov (SACLAY)	Sven Vahsen (Hawaii)
IF06	Calorimetry	Andy White (UTA)	Minfang Yeh (BNL)	Rachel Yohay (FSU)
IF07	Electronics/ASICS	Gabriella Carini (BNL)	Mitch Newcomer (UPenn)	John Parsons (Columbia)
IF08	Noble Elements	Eric Dahl (Northwestern)	Roxanne Guenette (Harvard)	Jen Raaf (FNAL)
IF09	Cross Cutting and System Integration	Jim Fast (PNNL)	Maurice Garcia-Sciveres (LBL)	Ian Shipsey (Oxford)
IF10	Radio Detection	James Beatty (Ohio State)	Abigail Vieregge (Chicago)	

Neutrino Physics Frontier

Co-Conveners

This Frontier covers topics relevant to physics associated with neutrinos.



Patrick Huber
Virginia Tech



Kate Scholberg
Duke University



Elizabeth Worcester
BNL

Topical Group		Topical Group co-Conveners			
NF01	Neutrino Oscillations	Peter Denton	Megan Friend	Mark Messier	Hiro Tanaka
NF02	Sterile Neutrinos	Georgia Karagiorgi	Bryce Littlejohn	Pedro Machado	Alex Sousa
NF03	Beyond the SM	Pilar Coloma	Lisa Koerner	Ian Shoemaker	Jae Yu
NF04	vs from Natural Sources	Yusuke Koshio	Gabriel Orebi Gann	Erin O'Sullivan	Irene Tamborra
NF05	Neutrino Properties	Carlo Giunti	Ben Jones	Lisa Kaufman	Diana Parno
NF06	Neutrino Cross Sections	Jonathan Asaadi	Baha Balantekin	Kendall Mahn	Jason Newby
NF07	Nuclear Safeguards and Other Applications	Nathaniel Bowden	Jon Link	Wei Wang	
NF08	Theory of Neutrino Physics	André de Gouvêa	Irina Mocioiu	Saori Pastore	Louis Strigari
NF09	Artificial Neutrino Sources	Laura Fields	Alysia Marino	Pedro Ochoa	Josh Spitz
NF10	Neutrino Detectors	Josh Klein	Ana Machado	Dave Schmitz	Raimund Strauss

Rare Processes & Precision Measurement Frontier

Co-Conveners

This Frontier explores fundamental physics with intense sources and ultra-sensitive detectors. It encompasses seeking tiny deviations from Standard Model expectations in properties and transitions of elementary particle and searches for extremely rare processes.



Marina Artuso
(Syracuse U.)



Alexey Petrov
(Wayne State U.)



Bob Bernstein
(FNAL)

Topical Group		Topical Group co-Conveners	
RF01	Weak Decays of b and c	Angelo di Canto	Stefan Meinel
RF02	Strange and Light Quarks	Emilie Passemar	Evgueni Goudovski
RF03	Fundamental Physics and Small Experiments	Tom Blum	Peter Winter
RF04	Baryon and Lepton Number Violation	Pavel Filievez Perez	Andrea Pocar
RF05	Charged Lepton Flavor Violation	Sacha Davidson	Bertrand Echenard
RF06	Dark Sector at Low Energies	Stefania Gori	Mike Williams
RF07	Hadron Spectroscopy	Tomasz Skwarnicki	Richard Lebed

Theory Frontier

The goal of the Theory Frontier is to articulate the recent advances and future opportunities in all aspects of theory relevant to HEP, including particle theory, formal/string theory, cosmological and astro-particle theory, and quantum information science.



Nathaniel Craig
(UCSB)



Csaba Csaki
(Cornell)



Aida El-Khadra
(UIUC)

Co-Conveners

Topical Group		Topical Group co-Conveners			
TF01	String theory, quantum gravity, black holes	Daniel Harlow	Shamit Kachru	Juan Maldacena	
TF02	Effective field theory techniques	Patrick Draper	Ira Rothstein		
TF03	CFT and formal QFT	David Poland	Leonardo Rastelli		
TF04	Scattering amplitudes	Zvi Bern	Jaroslav Trnka		
TF05	Lattice gauge theory	Zohreh Davoudi	Taku Izubuchi	Ethan Neil	
TF06	Theory techniques for precision physics	Radja Boughezal	Zoltan Ligeti		
TF07	Collider phenomenology	Fabio Maltoni	Shufang Su	Jesse Thaler	
TF08	BSM model building	Patrick Fox	Hitoshi Murayama	Graham Kribs	
TF09	Astro-particle physics and cosmology	Dan Green	Joshua Ruderman	Ben Safdi	Jessie Shelton
TF10	Quantum information science	Simon Catterall	Roni Harnik	Veronika Hubeny	
TF 11	Theory of neutrino physics	André de Gouvêa	Irina Mocioiu	Saori Pastore	Louis Strigari

Underground Facilities & Infrastructure Frontier

Co-Conveners

This Frontier covers requirements for underground science to succeed, including underground lab development, low background methods, and interdisciplinary synergies.



Laura Baudis
(U. Zurich)



Jeter Hall
(SNOLAB)



Kevin Lesko
(LBNL)



John Orrell
(PNNL)

Topical Group		Topical Group co-Conveners and Liaisons			
		Co-conveners			Liaisons
UF01	Underground Facilities for Neutrinos	<u>Accelerator Neutrinos</u> Tim Bolton	<u>Ovββ</u> Patrick Decowski Danielle Speller		<u>Neutrinos</u> Albert de Roeck <u>Astronomical v</u> Gabriel Orebi Gann
UF02	Underground Facilities for Cosmic Frontier	<u>LXe DM</u> Kaixuan Ni <u>Low Mass</u> Scott Hertel	<u>LAr DM</u> Emilija Pantic		<u>Particle DM</u> Hugh Lippincott Jodi Cooley <u>Instrumentation</u> Eric Dahl
UF03	Underground Detectors	<u>Gravity Waves</u> Laura Cadonati			<u>Instrumentation Frontier</u> Maurice Garcia-Sciveres
UF04	Supporting Capabilities	<u>Radon</u> Richard Schnee	<u>Cleanliness</u> Alvine Kamaha	<u>Low Background Assay</u> Brianna Mount	
UF05	Synergistic Research	<u>Nuclear Astrophysics</u> Daniel Robertson	<u>Geo-microbiology</u> TBD	<u>Geo-engineering</u> TBD	<u>QIS, QC</u> Maurice Garcia-Sciveres
UF06	An Integrated Strategy for Underground Facilities and Infrastructure	Laura Baudis Kevin Lesko	Jeter Hall John Orrell		<u>Early Career</u> Pietro Giampa William Thompson

Snowmass Early Career

DPF EC Early Career representatives

To represent early career members and promote their engagement in the Snowmass 2021 process and 2) to build a long-term HEP early career community that persists after the Snowmass process.



Fernanda Psihas, 2019
(Fermilab)



Sara Simon, 2020
(Fermilab)



Julia Gonski, 2021
(Columbia)

Key Initiatives

We are organized into five key initiatives:

1. **In-reach:** Professional development and building cohesion within the early career community
2. **Diversity, Equity, and Inclusion (DEI):** Work on initiatives to make the HEP community representative, welcoming, inclusive, and equitable
3. **Survey:** Survey the early career membership
4. **Long-Term Organization:** Define the long-term structure of the early career organization after the Snowmass process
5. **Snowmass Coordination:** Coordinate with the Snowmass frontiers and help get early career members involved in the Snowmass process

Snowmass Community Planning Meeting

Oct. 5-8, 2020 (FNAL, virtual)

- ~ 3,000 people registered !
- 63 submissions to the “Voices from the Community”
- 25 Plenary speakers; 5 “Future Facilities” panelists
- 101 Breakout sessions

Contributed (white) Papers (new deadline March 15, 2022)

- Specific scientific areas, technical articles presenting new results on relevant physics topics, and reasoned expressions of physics priorities, including those related to community involvement.
- Part of Snowmass proceedings. Remain part of the permanent record of Snowmass 2021, all on arXiv
- Submission instructions: <https://snowmass21.org/submissions/>.

**Heading to Community Summer Study (CSS) →
Snowmass 2021 in July 2021 @ UW-Seattle,
but the COVID-19 pandemic hit hard ...**

Snowmass New Timeline (January 29, 2021)

Because of the COVID-19 pandemic, the Snowmass Report and the Community Summer Study meeting (CSS) will be delayed by one year until 2022. The overall schedule for the Snowmass process will be adjusted accordingly. After extensive consultation with our community and the frontier conveners/advisors, the Snowmass Steering Group recommends the following general guidelines for the implementation of the Snowmass delay:

- High-level activities will be on hold until the end of June, 2021. These activities include Frontier-level and Topical Group-level workshops, All-conveners meetings, Advisory Group meetings and Newsletters.
- Other Topical Group and cross-frontier activities should be either paused or reduced to a significantly lower level, proceeding only as necessary to ensure scientific continuity, meet essential programmatic needs, or maintain collaborative work with other units and communities.
 - No critical decisions will be made during the hiatus.
 - No individuals should feel obligated to participate in these activities.
- Individual, collaborative and self-organized work can continue at the discretion of the individuals involved.

All paused individual or group activities will continue to receive full consideration once the Snowmass process formally resumes.

Individual frontiers exercise their own practice to accommodate the difficult situations

Where We Are, Chronologically

SEC: Continued, slowdown. A “Heartbeat” mtg in April,
Survey Team, LTO team meetings from July

CEF: Continued, slowdown. Monthly contact meetings on going

EF: EF-06 (Muon Collider), 07 (EIC) continued; TG activities started from July 1;
EF workshop on Aug. 30 – Sept. 3

AF: AF-1 (edu.), AF-4 (Multi-TeV), AF-6 (Adv. tech) continued at a lower pace

NF: After a full pause, TG meetings started from June 24;
NF workshop on March 16 - 18, 2022

RP & PF: Discussions already started; TG mtgs in Sept.; Frontier workshop in May 2022

TF: Full pause (except muon collider activities); TG in August;
TF workshop in Spring 2022

CosmF: Full pause, restart in August; CF3 started meetings

CompF: Full pause, restart activities in late August

IF: Full pause, restart at end of August

UF: Full pause, restart as the others.

Announcements

EDIT

Snowmass Restart Announcement (August 2, 2021)

Dear members of the Snowmass community,

The Snowmass community planning exercise will resume the full activity from September 2021 after the delay due to the Covid-19 pandemic. The on-going activities and updates from the individual frontiers can be found at their frontier Wiki pages.

1. Snowmass Day: To get all of the frontiers and participants back together on a new starting point, regain our momentum and refocus our attention to the Snowmass activities, we plan to host a half-day zoom meeting: the “Snowmass Day”, on September 24, 2021, for all frontiers to lay out their plans forward. We envision a virtual meeting:

(a). Plenary: 2 hours, 12:00pm - 2:00pm EDT. Short presentations from all frontiers (plus Snowmass Early Career and Steering Group), to lay out the frontier’s plans for the upcoming activities.

(b). Breakout sessions: 2:30pm EDT. This is the opportunity to discuss frontier's status and future plans in details, to conduct cross-talk and interconnections between frontiers. The sessions will be especially helpful for those who are reconnecting to the Snowmass process after the long pause. The length of the breakout sessions will depend on the frontier’s needs.

2. CSS: The dates for the Snowmass Community Summer Study (CSS) to be held the University of Washington-Seattle have been fixed at July 17-27, 2022.

Tao Han

Chair, APS DPF

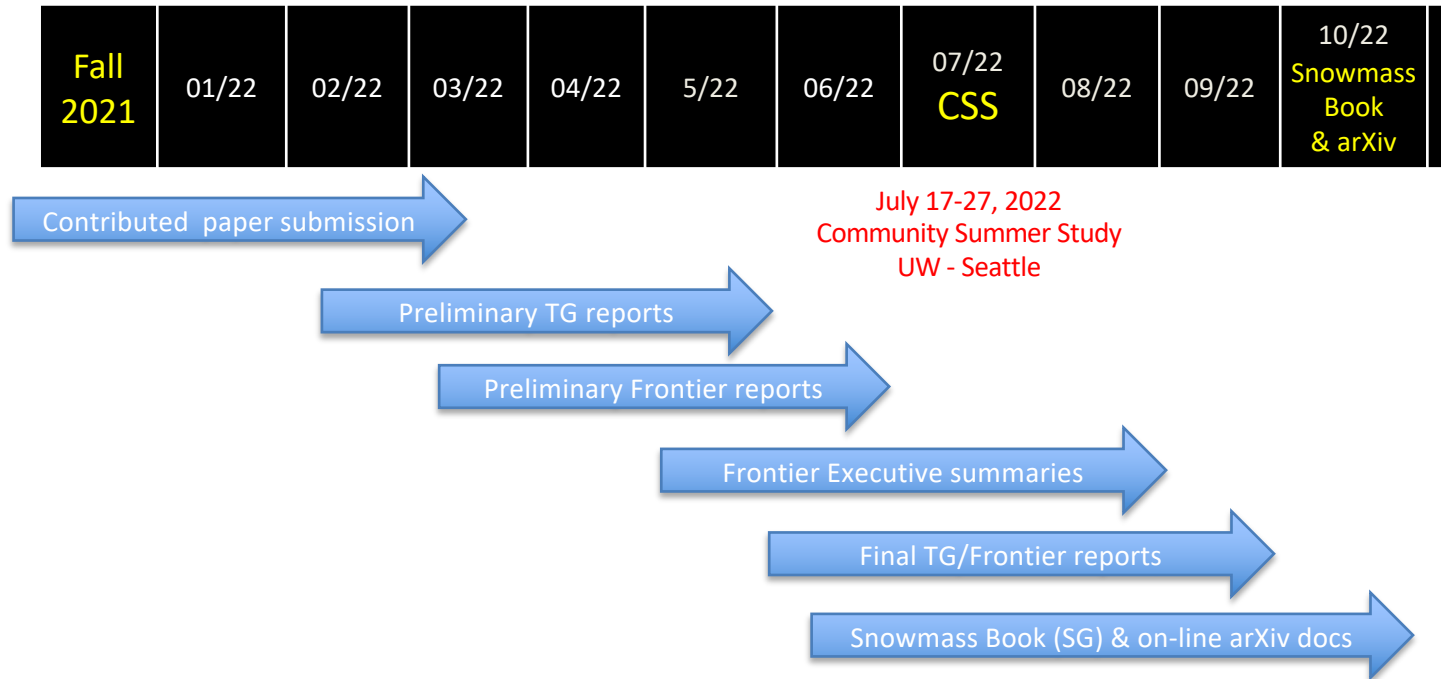
On behalf of the Snowmass Steering Group

A fun event:



3. As a new start of the Snowmass process, we would like to host a Snowmass logo design contest, to be used on the Snowmass Wiki page <https://snowmass21.org>. The theme of the logo should reflect the spirit of the Snowmass community planning practice. Any Snowmass participant can participate in the contest. Please submit your design by August 31, 2021 (midnight CDT) at the SLACK channel [#snowmasslogocontest](#) (Some submission has already been received!). Please post it there and then we will have a vote by September 15th (google poll to be set up later); highest count wins. The winner will receive a registration fee waiver for the Snowmass Community Summer Study (CSS) at Seattle. For any technical help, please contact on SLACK [@Robert Bernstein](#).

Snowmass Timelines



Please join the Snowmass activities for an exciting year to come!