



SnowMass2021

Conveners: Clarence Chang & Scott Dodelson

Outline

- Introduction to the Snowmass process
- Snowmass2021 organization
- Snowmass schedule
- Session overview

Snowmass and P5

Major Initiative prioritization in the HEP community proceeds in **2 steps**:

Snowmass: A series of workshops culminating in a written proceeding, collecting broad community input ([2013 Proceeding](#))

Organized by the [APS Division of Particles & Fields](#) (DPF)

2021 [Snowmass web site](#): see esp. [Cosmic Frontier WGs](#)

P5 (Particle Physics Project Prioritization Panel)

Subpanel of [High Energy Physics Advisory Panel](#) (HEPAP)

HEPAP: Advisory panel to DOE Office of HEP and NSF Math. & Physical Science Directorate

P5 issues a report with priorities in different budget scenarios, along with a timeline of construction & operation (Building for Discovery: [P5 2014 report](#), [exec summary](#))

The 2014 P5 report has been highly successful in that the advice has been followed (reasonably) closely, and the major new initiatives included are either immanent or under way.

Slides from Katrin in DESC presentation

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.

2014 P5 Report: Construction & Physics Timeline

- Projects listed here are all >50M\$ (medium & large).
 - A small projects portfolio was also recommended.
- Cosmic surveys
 - CMB-S4 was strongly recommended: HEP science case & community enthusiasm were present
 - Rubin Obs included with operations to 2032
- Note: no cosmology projects under construction after ~2030
 - Developing a plan for the next decade
 - Role of Snowmass21 is to organize the physics content.
- CMB-S4 is relevant for next decade of science
 - How will CMB-S4 results influence science in the next decade?
 - How will CMB-S4 data connect with future projects?



Slides from Katrin in DESC presentation

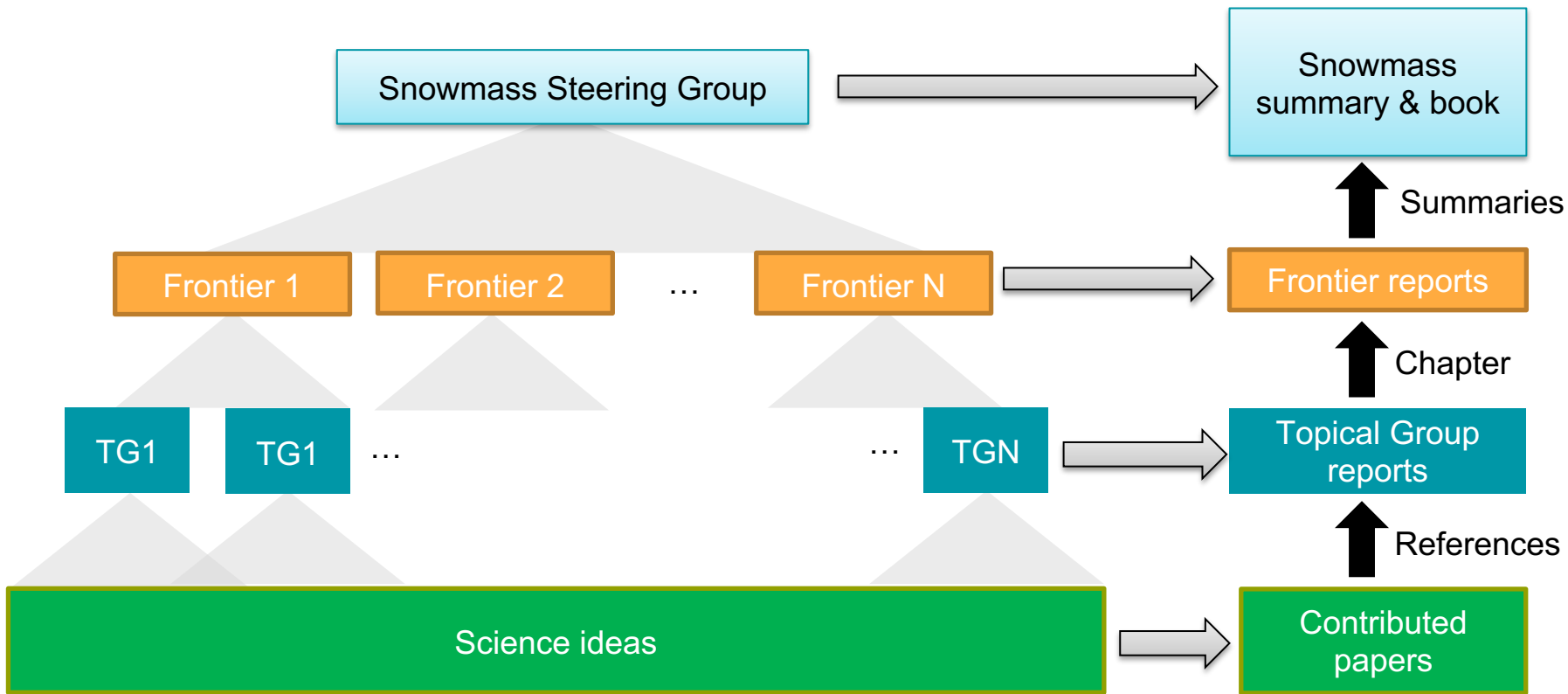
Overall Snowmass Structure

- 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 Frontier

- ❖ CF1. Dark Matter: Particle-like
- ❖ CF2. Dark Matter: Wave-like
- ❖ **CF3. Dark Matter: Cosmic Probes**
- ❖ **CF4. Dark Energy and Cosmic Acceleration: The Modern Universe**
- ❖ **CF5. Dark Energy and Cosmic Acceleration: Cosmic Dawn and Before**
- ❖ **CF6. Dark Energy and Cosmic Acceleration: Complementary Probes and New Facilities**
- ❖ **CF7. Cosmic Probes of Fundamental Physics**

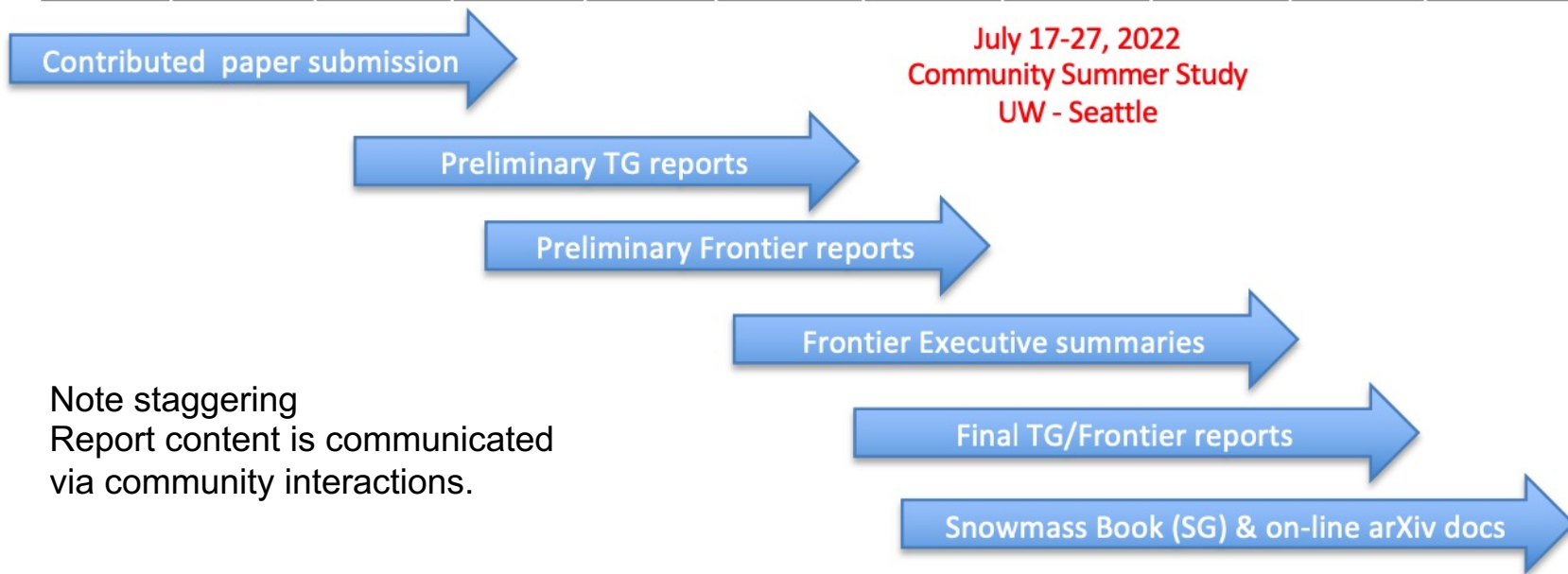
- Each Frontier has subgroups (7 on average)

Snowmass21 organization: connecting science to reports



Snowmass21 Timeline

Fall 2021	01/22	02/22	03/22	04/22	5/22	06/22	07/22 CSS	08/22	09/22	10/22 Snowmass Book & arXiv
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Note staggering
Report content is communicated
via community interactions.

Session overview

- Updates/overviews from various Topical Groups
- Open discussion
 - What topics connect with CMB-S4?
 - How do we organize to develop our ideas?
 - What aspects of the Snowmass21 process are relevant and who will engage?

	Snowmass Planning and CMB-S4: Plenary Introduction	<i>Clarence Chang</i> 10:35 - 10:50
11:00	CF3. Dark Matter: Cosmic Probes	<i>Alex Drlica-Wagner</i> 11:10 - 11:25
	CF4. Dark Energy and Cosmic Acceleration: The Modern Universe	<i>Anze Slosar</i> 11:25 - 11:40
	CF5. Dark Energy and Cosmic Acceleration: Cosmic Dawn and Before	<i>Deirdre Shoemaker</i> 11:40 - 11:55
12:00	CF6. Dark Energy and Cosmic Acceleration: Complementarity of Probes and New Facilities	<i>David Schlegel</i> 11:55 - 12:10
	CF7. Cosmic Probes of Fundamental Physics	<i>Ke Fang</i> 12:10 - 12:25
	Mid-Parallel Break	12:25 - 12:45
	TF09: Astro-particle physics and cosmology	<i>Daniel Green</i> 12:45 - 13:00
13:00	Discussion	<i>Scott Dodelson</i> 13:00 - 14:00
14:00		



How to Engage with Snowmass21



- Snowmass is an opportunity to shape the future of High Energy Physics and Astrophysics (HEPA)
- There are many ways to engage!
 - Go directly to Frontier and Topical Group conveners, write white papers, get your ideas out there! Visit the [Snowmass 2021 webpage](#)
 - **Snowmass Early Career** can help connect you via the [#welcome-to-snowmass](#) Slack channel
 - Early Career liaisons in each of the frontiers
 - Also a [#snowmass-young](#) Slack channel for general EC announcements

Opportunities for Networking, Community Building, and Advocacy

- Early in Snowmass process, there was wide community feedback that the community wants an Early Career organization that persists beyond Snowmass
- **SEC Core Initiatives** are engaging in the Snowmass process and we plan for them to persist beyond Snowmass
 - Long-term organization
 - Diversity, equity, and inclusion
 - Inreach
 - Survey
- [#welcome-to-snowmass](#) Slack channel to join



An Opportunity to Make Your Individual Voice Heard

[Take the Survey HERE](#)



- Encourage full HEPA community to participate in survey
- Deadline of **August 15th (~1 week left)!**
- Collects opinions & experiences across
 - Careers
 - Physics Outlook
 - Workplace Culture
 - Harassment/Racism
 - Visa Policies
 - COVID-19
 - Demographics

- [Fermilab News Article](#)
- Any questions? Suggestions? Ping us at SNOWMASS21-SURVEY@fnal.gov





Snowmass Day: September 24, 2021
CSS@UW-Seattle: July 17-27, 2022

Visit the [Snowmass 2021 webpage](#) to learn about Frontiers, white papers, and SEC!

We hope to see you on the [#welcome-to-snowmass](#) Slack channel!