

# NF Input to Steering Committee Questions

Patrick, Kate, Elizabeth

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TGC Meeting

# Introduction

- We are asked to provide input to the steering committee on the following topics:
  - Snowmass report format
  - Dates of CSS
  - Workshop plans before CSS
  - Addressing SEC input
- Today's slides are intended to inform you of the issues we are asked to address and form a starting point for our input to steering committee
  - Will point out which parts of the slides are intended for NF response slides
- Input from TG roundtable will be incorporated

# Snowmass Report Structure

<https://snowmass21.org/report>

**Snowmass Summary Report (~50 pages)** [audience: Snowmass community, science community, funding agencies]

1. Snowmass in 2 pages for the public (with help of Kathryn Jepsen, Editor-in-Chief, Symmetry magazine)
2. Executive Summary: ~10 pages
3. Introduction
4. 10 Frontier Executive Summaries
5. Executive Summaries of Multi-Frontier Topics
6. Conclusion

**Snowmass Report (~500 pages)** [audience: Snowmass community + P5 Committee] (see [Snowmass 2013 Report](#))

1. Snowmass Summary Report (~50 pages)
2. Frontier Summaries (~400 pages with 10 Frontiers)
3. Multi-Frontier Topic Summaries (~50 pages)

**Reports of Ten Frontiers** [audience: Snowmass Frontiers & Topical Groups] - web based (see [Snowmass 2013 webpage](#))

Each Frontier Report consists of

- Frontier Summary: < ~50 pages (including “Subgroup” summaries, a few pages each subgroup)
- Subgroup Group Reports: Each report could be as short as a few pages (materials in the Frontier Summary), and should not be longer than a few tens of pages. Subgroups could be (i) Topical Groups, (ii) Groups or Topics spanning multiple Topical Groups within one Frontier (examples include “Neutrino Mass” for the Neutrino Frontier, and “QCD and Strong Interactions” for the Energy Frontier), or (iii) other options. Each Frontier has flexibility to choose one of these options.

**Reports of Multi-Frontier Topics** [audience: Snowmass Frontiers & Topical Groups]

- Multi-Frontier Topics are topics spanning multiple Frontiers. Examples include Dark Matter, Neutrino Double-Beta Decay, and Quantum Science.
- Each Multi-Frontier Topic Summary: ~10 page

**Contributed Papers**

- Community Contributions: See the procedure [here](#).

## • Frontier Report:

- Frontier Summary: <50 pages including “subgroup” summaries
- “Subgroup” reports: variable length, few pages up to 10s of pages
  - Authorship of these intended to include community members
- “Subgroups” could be topical groups but could be combinations or subsets of topical groups – up to each frontier how to define

# NF Response To Proposed Structure

- Defining “subgroup” as distinct from topical groups seems likely to cause confusion
  - Propose removing this concept
- Our preferred NF report:
  - ~70 pages with structure not necessarily linked to particular topical groups – each frontier can define this as needed
- Topical group reports:
  - Actually, we have some preference to not do these at all, but we will if everyone else is doing them!
  - We would like to leave these up to Topical Group conveners + community
  - Lengths may vary
  - We do like the idea of including community members as authors

# Dates of CSS

- There was some discussion in the steering committee of changing the dates of the CSS in hopes of increasing the chances for an in-person meeting, but this seems challenging
  - No 2021 dates are sure to be ok for in-person
  - Anything later in 2021 than the proposed CSS dates runs into assorted conflicts
  - Summer 2022 would extend the process too long and delay P5
- NF response:
  - We feel our NF story can be in pretty good shape by summer 2021
  - We are not enthusiastic about extending the process beyond 2021
  - Prefer original dates, remote if necessary (likely)

# Workshop Plans before CSS

- NF Response:
  - ~Weekly "contribution" workshops
    - Likely beginning in December
    - Details to be discussed in this meeting
  - NF meeting March 2020
    - Remote meeting hosted by ORNL (logistics underway)
  - Assorted topical group workshops on the calendar

# Questions from SEC

- SEC posed questions regarding whitepaper organization, inclusion of SEC liaisons in meetings and planning process, and point of contact for SEC with Snowmass leadership
  - Directed generally at all frontiers
  - NF conveners discussed these issues with NF SEC liaisons
- White paper organization
  - We are thinking of conveners' role as "gentle cat herding"
  - Contributions are driven by community
  - Conveners make sure there are no gaps, encourage consolidation if it makes sense, put people in touch with each other
  - LOI submitters may or may not be contacted, and are very welcome to communicate with conveners
  - NF "contribution workshops" are intended to help with coordination
  - We will try to improve the website information
- Feedback, inclusion:
  - We checked with our SEC-NF reps and found they are happy with their level of inclusion (SEC liaisons have a standing slot in all convener meetings and are active in topical groups)
  - Always happy for communication and feedback

# Up Next

- SEC Report
- Roundtable of topical groups with input on:
  - Proposed overall structure of Snowmass report
  - Section headings for NF report (thanks to those who have been editing in Overleaf!)
  - Structure and content of “contribution meetings”



# Current Status of NF Draft Outline

5	<b>1 Executive Summary</b>	<b>1</b>
6	1.1 Neutrino Frontier in Snowmass	1
7	1.2 Summary of Physics Topics	1
8	1.3 Summary of Enabling Tools and Technology	1
9	1.4 Additional Considerations	1
10	<b>2 Introduction</b>	<b>1</b>
11	2.1 Introduction to Neutrinos	2
12	2.2 Current Knowledge and Landscape	2
13	2.3 How to Read This Document	2
14	<b>3 Physics Topics</b>	<b>2</b>
15	3.1 Theory and Motivation	2
16	3.2 Three-Flavor Neutrino Oscillation	2
17	3.2.1 Goals in Three-Flavor Oscillations	2
18	3.2.2 What is Needed	2
19	3.3 Physics Beyond the Standard Model in Neutrinos and Neutrino Experiments	3
20	3.3.1 Sterile Neutrinos and the Short-Baseline Anomalies	3
21	3.3.2 Other BSM Signatures In Neutrino Oscillation	3
22	3.3.3 Direct Dark Matter Detection	3
23	3.3.4 Searches for Baryon Number Non-Conservation	3
24	3.4 Astrophysics and Cosmology In Neutrinos and Neutrino Experiments	3
25	3.4.1 Solar Neutrinos	3
26	3.4.2 Supernova Burst Neutrinos	3

28	3.4.3 Diffuse supernova neutrino background	3
29	<b>3.5 Neutrino Properties</b>	<b>3</b>
30	3.5.1 Measuring the Absolute Neutrino Mass in the Laboratory	3
31	3.5.2 Dirac vs Majorana Nature of the Neutrino	3
32	3.5.3 Neutrino Electromagnetic Properties	3
33	3.6 Neutrino Interactions	3
34	<b>4 Enabling Tools and Technology</b>	<b>3</b>
35	4.1 Computing and Algorithms	3
36	4.1.1 Simulation	3
37	4.1.2 Data Preservation	3
38	4.1.3 Machine Learning	3
39	4.1.4 High Performance Computing	4
40	4.1.5 Data Acquisition and Triggering	4
41	4.1.6 Expected Computing Resource Needs	4
42	4.1.7 Software Infrastructure	4
43	4.2 Artificial Neutrino Sources	4
44	4.2.1 Conventional Neutrino Beams	4
45	4.2.2 Neutrinos from Spallation Neutron Sources	4
46	4.2.3 Nuclear Reactors	4
47	4.2.4 Novel Neutrino Sources	4
48	4.3 Detectors	4
49	4.4 Facilities	4
50	<b>5 Applications and Community Engagement</b>	<b>4</b>
51	5.1 Applications	4
52	5.1.1 Nuclear Non-Proliferation	4
53	5.2 Community Engagement	4
54	<b>6 Conclusion</b>	<b>4</b>
55	<b>Glossary</b>	<b>5</b>
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