Neutrino Frontier Logistics and Business*

CSS, 7/18/2022

Patrick Huber, **Kate Scholberg**, Elizabeth Worcester

Patrick Huber
Virginia Tech

Kate Scholberg
Duke University

Elizabeth Worcester
BNL

*A tiny bit of content

From Gordon, yesterday

Community

- Be welcoming and open minded
- Communicate with empath
- Respect each other
- Recognize that intent does not equate to impact
- Strive to make informal activities relating to DPF inclusive to all
- Actively work to better our community

snowmass-code@uw.edu
(active tomorrow)

http://seattlesnowmass2021.net/codeofconduct/

THANK YOU to the Topical Group Conveners!

Topical Group	Co-Conveners			
NF01: Neutrino Oscillations	Peter Denton	Megan Friend	Mark Messier	Hiro Tanaka
NF02: Anomalies	Georgia Karagiorgi	Bryce Littlejohn	Pedro Machado	Alex Sousa
NF03: Beyond the SM	Pilar Coloma	Lisa Koerner	Ian Shoemaker	Jae Yu
NF04: Neutrinos from Natural Sources	Yusuke Koshio	Gabriel Orebi Gann	Erin O'Sullivan	Irene Tamborra
NF05: Neutrino Properties	Carlo Giunti	Julieta Gruszko	Ben Jones	Diana Parno
NF06: Neutrino Cross Sections	Steven Gardiner	Baha Balantekin	Kendall Mahn	Jason Newby
NF07: Nuclear Safeguards and Other Applications	Nathaniel Bowden	Jon Link	Wei Wang	
NF08/TF11: 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

Past conveners: Lisa Kaufman (NF05), Jonathan Asaadi (NF06)

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*Minute-taker winners!! Thank you!!

Also thank you to liaisons!

Frontier	Liaison	
Computational Frontier	Alex Himmel	
Cosmic Frontier	Kim Palladino	Yvonne Wong
Rare Processes and Precision Frontier	Bob Bernstein	
Accelerator Frontier	Alysia Marino	
Energy Frontier	André de Gouvêa	
Instrumentation Frontier	Mayly Sanchez	
Community Engagement Frontier	Claire Lee	
Underground Facilities Frontier	Albert de Roeck	
Theory Frontier	K.S. Babu	Irina Mocioiu
Early Career	Jacob Zettlemoyer	

Past liaisons: Laura Fields (AF), Tali Figueroa-Feliciano (CF),
Erin Conley, Steven Gardiner, Jay Hyun Jo, Tanaz Moyayai, Vishvas Pandey, Xianyi Zhang (SEC rotators)

And **thank you** to everyone who submitted LOIs, white papers, gave talks at meetings, contributed comments and discussion so far!

DALL-E mini output, "Thank you neutrino people"

But we are not done yet.... !

NF Snowmass Timeline

develop first draft messages, feedback

finalize the messages from NF to community

communicate to all-Snowmass community

finalize the message to P5 from NF in all-Snowmass context

White paper workshops: Fall 2021
Extended outline due (NF): Dec 18 2021
Series of meetings for community feedback on TG reports : Jan-Feb
Topical Group Report drafts posted (NF): March 11
Community feedback period: March 11-April 10
NF Workshop @ ORNL: March 16-18 [hybrid]
All-Snowmass Community NF Colloquium Series: March-April
Preliminary (TG & Frontier) Reports due (NF): May 10
Preliminary (TG & Frontier) Reports due (Snowmass): May 31
Community feedback period: June 1 – July 26
Community Summer Study (Seattle): July 17-26
Final (TG & Frontier) Reports due (NF): Sept 9
Final (TG & Frontier) Reports due (Snowmass): Sept 30

Neutrino Frontier dates
All Snowmass dates
(NF) community feedback dates

What are the goals of this Snowmass?

Refine our messages...

any gaps? Missed opportunities? Better takes?

Communicate to the community at large...

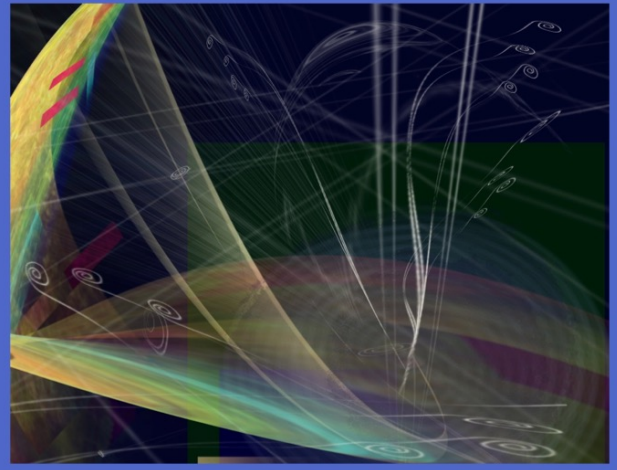
go to other sessions, too! Talk to people!

See Elizabeth's "Workplan" talk yesterday for many NF-related sessions (and *go to other Frontiers' sessions*!)

NEUTRINO FRONTIER: COMMUNITY SUMMER STUDY WORK PLAN

PATRICK HUBER, KATE SCHOLBERG, **ELIZABETH WORCESTER***

JULY 17, 2022



Robin A Giacomini, "Dall'Oscurita", 15x15, Digital Painting

Where we are with the reports:

Topical Group reports: `https://snowmass21.org/neutrino/start/drafts`

- on second round of community feedback
- still open for comments!
- we will acknowledge all who made comments

Report Drafts

Drafts will be placed here when available for each topical group

Please note, the draft number in this wiki supersedes any draft number in the pdf file name, for the purpose of comments in the spreadsheet.

NF01: Neutrino Oscillations

NF01 Report Draft v1

NF01 Report Draft v2

NF01 feedback spreadsheet

*NF08/TF11 is on a different schedule

Where we are with the reports:

Executive Summary of the NF report

`https://snowmass21.org/neutrino/start/drafts/execsumm`

- now open for comments!

NF Report Executive Summary

NF Executive Summary Draft v1

Executive Summary Community Feedback Spreadsheet

Where we are with the reports:

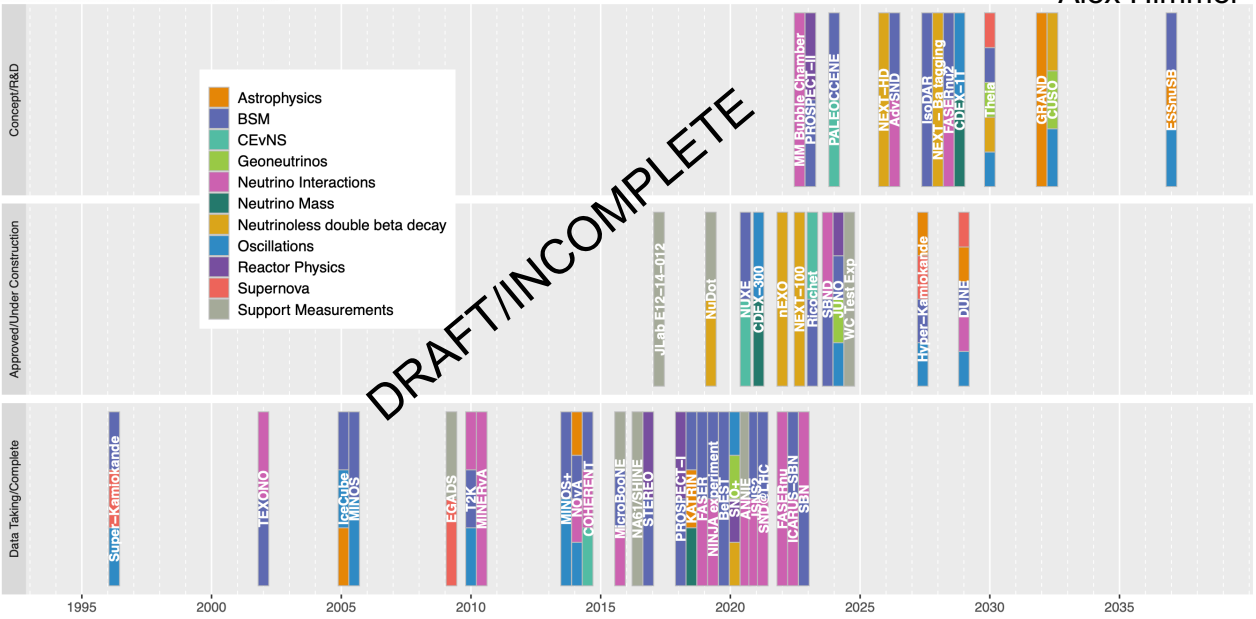
Full NF report: to be posted this week

- A bit more detail than the executive summary
- Less detail than the TGC reports
- Much drawn from TGC report executive summaries

Includes a **table of experiments**

- information directly from collaborations
- very simple info: experiment name, status, dates, physics goals, reference
- please fill if out you have not: https://forms.gle/vUGuxmEQrf485uGCA
- we are finalizing a visualization

Alex Himmel



Final section of the NF Report Executive Summary [not logistics, but content]

1.6 Neutrino Community Aspirations for US-HEP Neutrino Frontier Science and Activities

This section provides a concise high-level synthesis of input from the neutrino community regarding US-HEP planning. It is intended as input for the next P5, summarizing neutrino community aspirations for US-HEP activities in the next decade, with a view to beyond the next decade.

- Opportunities for advances in the neutrino sector are entwined with opportunities in many other sectors, spanning all of the Snowmass Frontiers and multiple scales of timescale, size and cost. **A future program with a healthy breadth and balance of experimental scales, supported via a deliberate and ongoing process, is highly desirable.** This process should also provide opportunities to explore and eventually resolve existing and future neutrino-related anomalies and to develop instrumentation and new beam technologies that will have a broad impact across the field. Furthermore, connections between programs should be carefully curated to optimize science output.

- Although there has been tremendous progress on oscillation physics with the current experiments and the DUNE/LBNF program since the last P5, the primary questions about the three-flavor paradigm remain unanswered, and the motivations for answering them, and probing new physics beyond the three-flavor paradigm, are undiminished. **Completion of the existing experiments and execution of DUNE Phase I as soon as possible will be critical for answering these questions.**

- For DUNE to achieve the precision physics goals recommended by the 2014 P5 report, a three-component upgrade is required, including enhancements of beam, far detector and near detector. **Each of the DUNE Phase II upgrades offers broader physics opportunities than originally envisioned.** Exciting opportunities for DUNE Phase II should be enabled with an process inclusive of the community formulated to explore them.

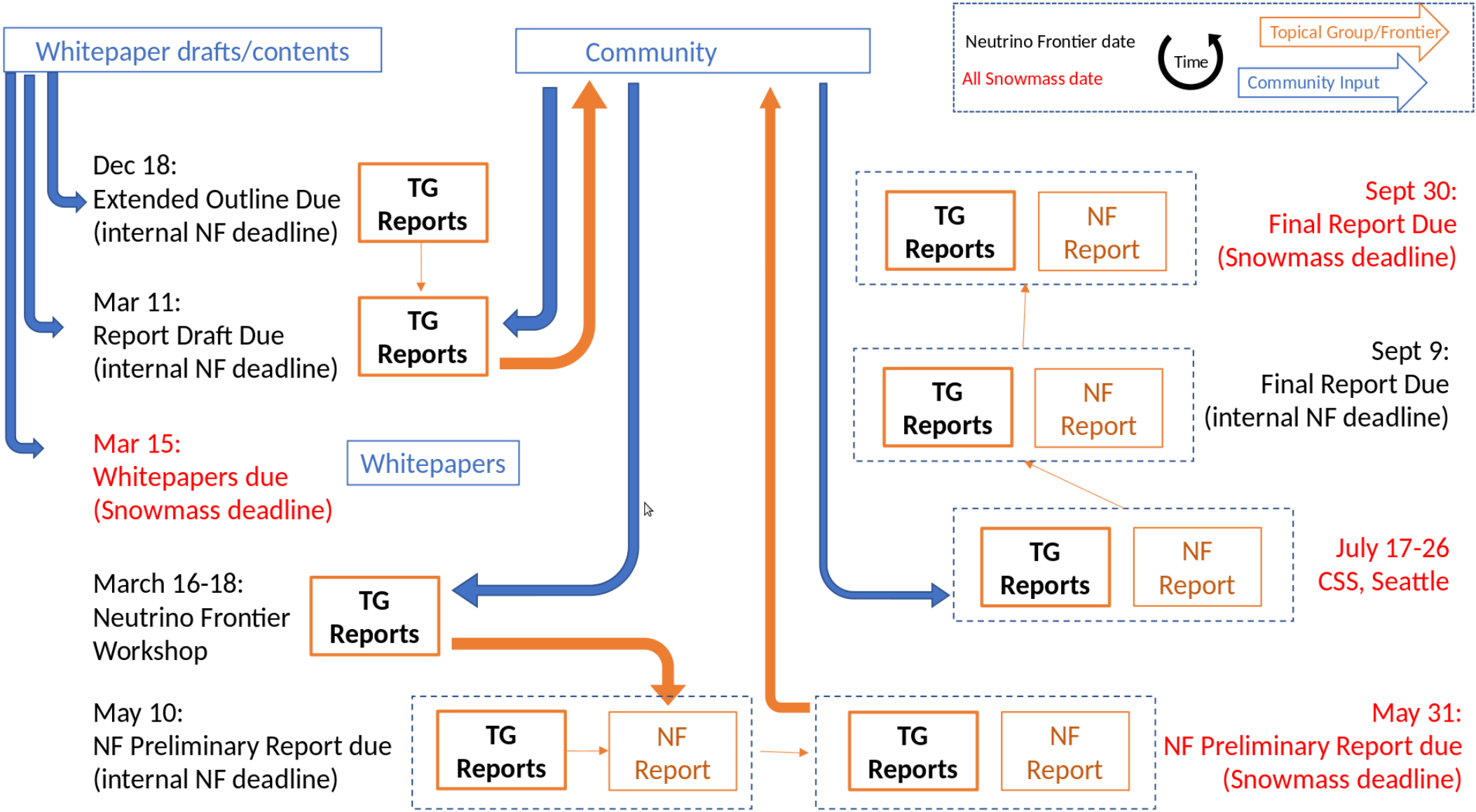
- Many questions in neutrino physics arise from theory and conversely neutrino experimental results raise many theory questions. A strong neutrino theory program is therefore essential to reap the full scientific benefit from the investment into new experimental facilities. Moreover, there is a significant amount of theory understanding required to correctly connect experimental observables with the underlying physics parameters. **Strong and continued support for neutrino theory is needed.**

- Neutrinos have connections to practically all other sectors of particle physics as well as many adjacent disciplines, offering neutrino physicists the opportunity to be community leaders in issues of diversity, equity and inclusion. These opportunities must be embraced. **A cohesive, HEP-wide strategic plan for DEI and community engagement is needed.**

Please submit your comments on the spreadsheet!

Note-takers welcome for any of the sessions,
including (especially?) other frontier sessions with relevant info

Backup


Whitepaper drafts/contents
Community
Neutrino Frontier date
All Snowmass date
Time
Topical Group/Frontier
Community Input
Dec 18:
Extended Outline Due
(internal NF deadline)
TG Reports
Mar 11:
Report Draft Due
(internal NF deadline)
TG Reports
Mar 15:
Whitepapers due
(Snowmass deadline)
Whitepapers
March 16-18:
Neutrino Frontier
Workshop
TG Reports
May 10:
NF Preliminary Report due
(internal NF deadline)
TG Reports
NF Report
TG Reports
NF Report
Sept 30:
Final Report Due
(Snowmass deadline)
TG Reports
NF Report
Sept 9:
Final Report Due
(internal NF deadline)
TG Reports
NF Report
July 17-26
CSS, Seattle
May 31:
NF Preliminary Report due
(Snowmass deadline)