

The logo for Snowmass 2021 is displayed on a dark rectangular background. The word "Snow" is in a light blue color, "Mass" is in white, and "2021" is in a light blue color. The text is written in a stylized, cursive font.

SnowMass2021

A Primer

from the Snowmass Topical Group on Neutrino Properties (NF05)

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What is Snowmass?

- ◆ The US particle-physics planning process has several phases:
 - ◆ Community planning (“**Snowmass**”): Massive year-long discussion culminating in a 1000+-physicist meeting in July 2021. Capture the questions, challenges and new ideas across the field – not only in the US but around the world.
 - ◆ Strategic advice (“**P5**”): Particle Physics Project Prioritization Panel shapes community input into strategic 10-year plans for differing US budget scenarios
 - ◆ US funding decisions (**DOE and NSF**): advised by High Energy Physics Advisory Panel (HEPAP) which commissions P5 report
- ◆ Last Snowmass process: 2013 (P5 report followed 2014)
 - ◆ Last-but-one was in 2001

Too Long; Did Not Read

- ◆ Through Snowmass, the nuclear/particle physics community makes the case for **the most important science** to do
- ◆ Eventually this input **guides US funding agencies** for the next ~5-20 years
- ◆ Input from scientists outside the US is critically important: our physics is **worldwide!**
- ◆ For the first time, we have a Neutrino Frontier and a working group on Neutrino Properties. Let's make the case for this great work!
- ◆ Contributed papers are publicly available

Summer Mini-Workshop Series

◆ <https://indico.fnal.gov/category/1172/>

| Date | Subject |
|-----------|---|
| 8 July | Direct neutrino mass measurements |
| 15 July | Particle theory of neutrinoless double-beta decay |
| 22 July | Nuclear theory of neutrinoless double-beta decay |
| 5 August | Neutrinoless double-beta decay experiment I |
| 12 August | Neutrino electromagnetic properties |
| 19 August | Neutrinoless double-beta decay experiment II |

Upcoming Activities II

- ◆ July 17: online Neutrino Town Hall
 - ◆ <https://indico.fnal.gov/event/43581/>
- ◆ **August 31: Letters of Interest** (≤ 2 pages, not counting references)
 - ◆ Precursors to longer proposals or white papers
 - ◆ Used to help probe community interest and plan Snowmass
 - ◆ Please list a corresponding author (just in case)
- ◆ **July 31, 2021: Contributed papers**
 - ◆ Part of Snowmass proceedings – input to strategy
 - ◆ White papers, proposals, new results, arguments for prioritization
- ◆ **November 4 – 6: Snowmass Planning Meeting** (Fermilab or remote)
- ◆ Spring 2021: Neutrino Planning Meeting
- ◆ **July 11 – 20, 2021: Snowmass main meeting** (UW, Seattle)

Join the Discussion

- ◆ **Mailing list:**

- ◆ Send an email to listserv@listserv.fnal.gov with empty subject line, and body text:
- ◆ *subscribe SNOWMASS-NF05-PROPERTIES Your Name*

- ◆ **#neutrino_properties** and **#neutrino** channels on Snowmass slack

- ◆ Many other interesting channels too – theory, instrumentation, community engagement, and more
- ◆ We'll add you to Slack if you join our mailing list, or email one of us to be added

Useful links

- ◆ Main Snowmass site:
 - ◆ <https://snowmass21.org/>
 - ◆ Neutrino Properties: <https://snowmass21.org/neutrino/properties/start>
 - ◆ Letters of Intent: <https://snowmass21.org/loi>
 - ◆ Contributed Papers: <https://snowmass21.org/submissions/start>
- ◆ Documents from Snowmass 2013 (neutrinos in Intensity Frontier)
 - ◆ <https://www.slac.stanford.edu/econf/C1307292/docs/IntensityFrontier.html>

Other Possibly Interesting Topical Groups

◆ Neutrino Frontier

- ◆ NF01: Neutrino oscillations
- ◆ NF02: Sterile neutrinos
- ◆ NF03: Beyond Standard Model
- ◆ NF04: Neutrinos from natural sources
- ◆ NF05: Neutrino properties
- ◆ NF06: Neutrino int. cross sections
- ◆ NF07: Applications
- ◆ NF08: Theory of neutrino physics
- ◆ NF09: Artificial neutrino sources
- ◆ NF10: Neutrino detectors

◆ Frontier for Rare Processes and Precision Measurements

- ◆ RF3: Fundamental physics in small experiments
- ◆ RF4: Baryon and lepton number violation

◆ Cosmic Frontier

- ◆ CF7: Cosmic probes of fundamental physics

◆ Theory Frontier

◆ Accelerator Frontier

- ◆ AF2: Accelerators for Neutrinos

◆ Instrumentation Frontier

◆ Computational Frontier

◆ Underground Facilities

◆ Computational Frontiers

<https://snowmass21.org/>