

NF03 Kick-Off Meeting: Day 2

NF03: neutrino-related BSM and searches for BSM
using neutrino facilities

October 1, 2020

Pilar Coloma, **Lisa Koerner**, Ian Shoemaker, Jae Yu

Mailing list: snowmass-nf03-bsm@listserv.fnal.gov

Slack channel: [neutrino_bsm](#)

10/1/2020 Website: <https://snowmass21.org/neutrino/bsm/start>

NF03 LOIs and Kick-off Meetings

- Of 149 Lol's total (~half NF Lol's), we've accepted 34 as the primary
- Kick-off meetings to highlight primary LOIs
 - Day 1:
 - 9 – 12 (CDT), Thursday, Sept. 17
 - Registration and agenda <https://indico.fnal.gov/event/44987/>
 - 70 registered
 - Day 2:
 - 9 – 12:45 (CDT), Thursday, Oct. 1
 - Registration and agenda <https://indico.fnal.gov/event/44988/>
 - 61 registered

Kick-Off Meeting Goals

- Assess and understand the received Lol's
- Identify missing potential topics
- Form sub-topical groups based on Lol's
 - Identify interested people and encourage them to form a group through the discussion
 - Primary Lol's show some emerging patterns
 - Incorporate non-primary Lol's and other ideas into the sub-group structure
 - Begin skeleton whitepaper for each sub-topical group
- To prepare for [CPM](#) on 10/5 – 8, 2020
 - Skeleton document with some minimal structure
 - Assign topics to participants
 - Begin to work together for necessary studies
 - Devise schedule and milestones for completing and documenting the work
- Midway progress check at the U. Pitt joint workshop: 2/24 – 27, 2021
- [Snowmass 2021 summer study](#): 7/11 – 17, 2021 → Final report 10/21

Proposed Sub-topical Groups

- Proposed groups
 - Heavy neutral leptons
 - Coherent Elastic Neutrino-Nucleus Scattering
 - BSM searches within neutrino oscillations
 - Large Extra Dimension searches, Lorentz and CPT symmetry, Non-unitarity of the neutrino mixing matrix, Non-standard interactions, etc
 - Baryon number violation
 - Cosmogenic dark matter and exotic particle searches
 - Beam-originating dark matter candidate searches (includes ALPs)
- We are in the process of identifying leads of these groups; we will send an announcement once we have it worked out

NF03 Vision on Whitepapers

- Each sub-topical group generates one or more whitepapers supported by detailed studies
 - Most ideal if one whitepaper can be produced for each sub-topical group, that encompasses all frontiers
 - Encourage synergy between similar topics
 - Promote new ideas out of the existing ones
 - Give input to facilities to prepare to meet the BSM needs
 - Provide strong physics justifications to the planning document, with associated timeline
- Parts of these whitepapers make up the NF03 contributions to the Snowmass planning document

Joint Workshop

- A joint meeting with NF01, NF02, NF03, RF06, TF11 and any other interested groups
- Workshop dates: Wed., Feb. 24 – Sat. Feb. 27, 2021
 - If fully online, Wednesday (2/24) – Friday (2/26)
- Host: University of Pittsburgh
- Format of the workshop
 - Plan on hybrid in-person or fully online meeting
 - Monitor COVID – 19 situation through as late a stage as possible and make a decision – Likely to be mid Jan. 2021
- Suggested scope: New Physics Opportunities at Neutrinos in Theoretical and Experimental Perspectives

Input for NF06 (Nu Interactions)

- NF06 is interested in compiling a list of measurements that would be of interest to the neutrino BSM community
- If you have any thoughts on this subject, please let us know

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| 2 | physics search | needed input channel | What features are relevant? | precision known? | precision desired? | comments |
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