

Snowmass 2021

EF09 - BSM

More general explorations

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https://snowmass21.org/energy/bsm_general



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Expanding collider option to present

- Several discussions pre and during EF workshop
 - Great interest in extending existing projection studies beyond what was done during ESG
- Future pp colliders (“default” stays at $\sqrt{s}=100$ TeV)
 - What’s the reach if $\sqrt{s} = 75$ TeV? (easier magnet technology)
 - What’s the gain if we could reach $\sqrt{s} = 150$ TeV?
 - Not a realistic “short-term” goal from the accelerator point of view, but useful to give input to AF and understand physics reach dependence
- Muon-collider
 - Not really explored during ESG, however it’s now at a point that it makes sense to investigate its reach compared to other collider options
 - $\sqrt{s} = 3, 14$ TeV (being pursued as options in the AF)
 - $\sqrt{s} = 30$ TeV (similar idea behind the 150 TeV pp-collider)
- Of course exploration of energy working points in ee colliders is also far from complete and welcomes new contributions
- We encourage everyone to think about these options and pursue dedicated projections; please keep us posted!

MC Taskforce: how to get started

- MC taskforce twiki page ([link](#)) contains information on:
 - samples from collaborations/study-groups publicly accessible
 - simulation frameworks for various collider options
- Twiki page quickly evolving, watch out for updates coming up soon
 - Reminder: report during upcoming EF workshop in July
- You should have received an email requesting to **fill in information on possible common backgrounds** that can be centrally simulated (large-stat)
 - <https://docs.google.com/forms/d/e/1FAIpQLSfBDI8fy08uli35gLPFYAL2vGRF9YtkApm5i27Z6MCS9FDNXg/viewform?pli=1>
 - This is very important even if you only have a rough idea of what could be useful for you, since it allows us to plan for resources needed to generate and store such samples

Upcoming events

- Meeting on dark-showers (joint with EF10): Aug 13th, 12:00 US Eastern
 - Accepting abstract submission for short talks on the topic (see announcement email)
 - <https://indico.fnal.gov/event/44704/>
- Next EF09 Meeting: Aug 21st, 11:00 US Eastern
 - Please contact us if you have contributions/results you'd like to share
- LFV mini-workshop (joint with RF5): Sep 3rd, 11:00 US Eastern
 - Agenda TBA
- Snowmass Community Planning Meeting, week of Oct 5th
 - Moved from the previously announced November dates
 - General snowmass, common for all topical groups and frontiers
 - Program is being defined; will include Inter-frontier and cross working group discussions
 - E.g. Instrumentation: BSM requirements for future HEP detectors
 - We encourage you to start thinking about this and provide your feedback

Additional Resources

HL-LHC: pending

ILC-ee LOI <https://arxiv.org/pdf/2007.03650.pdf>

FCC-ee LOI <https://www.snowmass21.org/docs/files/summaries/EF/SNOWMASS21-EF-RF-TF-IF-CompF-TOPIC0-003.pdf>

CEPC LOI: pending?

MuC LOI: coming soon

List of all EF09 Public EOI:

<https://docs.google.com/spreadsheets/d/1UMIMgHNMfHgiwoJx7sZEEwymn4AcjULBztDrravoPIA/edit?usp=sharing>

Some community Survey “Accessibility Survey”

(<https://docs.google.com/forms/d/e/1FAIpQLSfhe-kAC4xyqu9AsYyQn423kMlyjgaRsckEyDfazBIzbx3Xlg/viewform>). This is something that we intend to use to provide consequential recommendations and “asks” to DPF and/or APS for how snowmass proceeds.