Snowmass Timeline and LOI discussion

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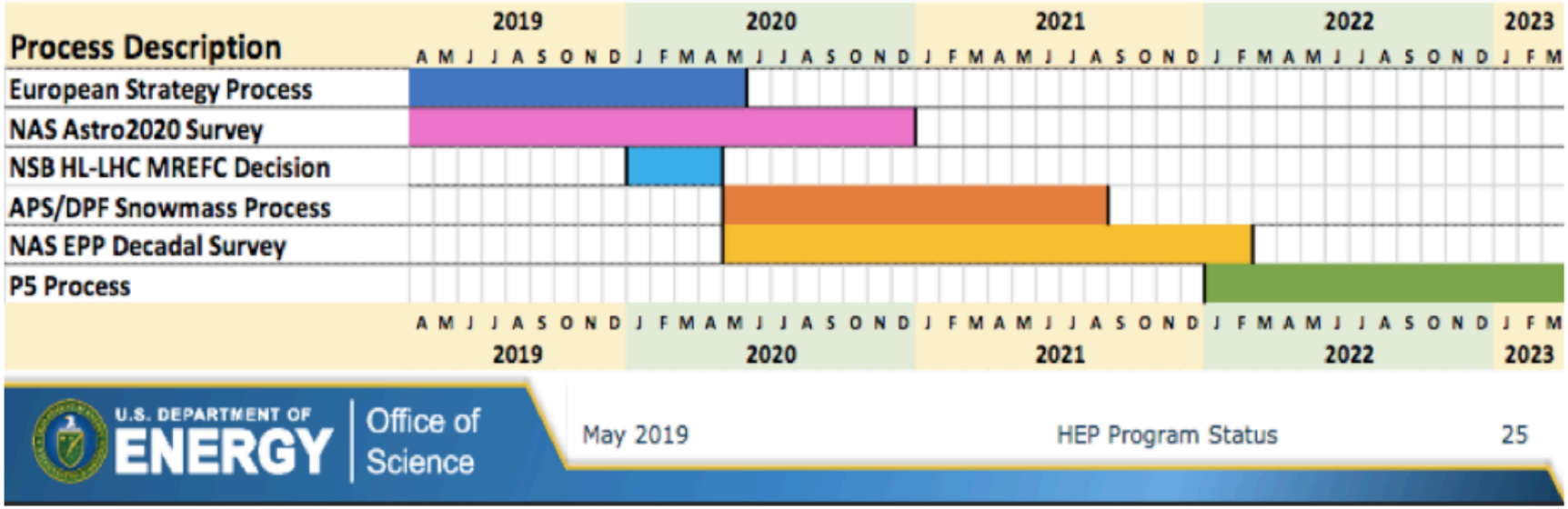
International Timeline



Snowmass Timeline & Milestones

- **January 2020:** Announcement of Frontier conveners and 2021 Snowmass site.
- **2020 APS April meeting** (April 18 – 21): **Town Hall meeting** to communicate with the community (attendance of > 800 people).
- **April 2020 - July 2021:** Developing proposals, workshops, interactions inside the community.
- **Paper contributions:**
  - **August 31, 2020:** Deadline for submission of "Letters of Interest":
    - 2 pages with descriptions of proposal and citation of the relevant papers (instructions) to be eventually turned into contributed papers in preparation for the Community Planning Meeting.
  - **July 31, 2021:** Deadline for submission of "Contributed Papers":
    - Contributed papers will be part of Snowmass Proceedings (submission instructions).
- **Community Planning Meeting, at FNAL: November 4-6, 2020.**
- **July 11 - 20, 2021:** Snowmass Summer Study at UW Seattle.

From the TOTW slides by A. Tricoli, M. Narain, L. Reina

Energy Frontier Topical Groups

Topical Group	Co-Conveners		
EF01: EW Physics: Higgs Boson properties and couplings	Sally Dawson (BNL)	Andrey Korytov (U Florida)	Caterina Vernieri (SLAC)
EF02: EW Physics: Higgs Boson as a portal to new physics	Patrick Meade (Stony Brook)	Isobel Ojalvo (Princeton)	
EF03: EW Physics: Heavy flavor and top quark physics	Reinhard Schwienhorst (MSU)	Doreen Wackeroth (Buffalo)	
EF04: EW Physics: EW Precision Physics and constraining new physics	Alberto Belloni (Maryland)	Ayres Freitas (Pittsburgh)	Junping Tian (Tokyo)
EF05: QCD and strong interactions: Precision QCD	Michael Begel (BNL)	Stefan Hoeche (FNAL)	Michael Schmitt (Northwestern)
EF06: QCD and strong interactions: Hadronic structure and forward QCD	Huey-Wen Lin (MSU)	Pavel Nadolsky (SMU)	Christophe Royon (Kansas)
EF07: QCD and strong interactions: Heavy Ions	Yen-Jie Lee (MIT)	Swagato Mukherjee (BNL)	
EF08: BSM: Model specific explorations	Jim Hirschauer (FNAL)	Elliot Lipeles (UPenn)	Nausheen Shah (Wayne State)
EF09: BSM: More general explorations	Tulika Bose (U Wisconsin-Madison)	Zhen Liu (Maryland)	Simone Griso (LBL)
EF10: BSM: Dark Matter at colliders	Caterina Doglioni (Lund)	LianTao Wang (Chicago)	

LOI Submission

From slides by A. Tricoli, M. Narain, L. Reina

- **Letters of Interest (LOI)**

  (submission period: April 1, 2020 – August 31, 2020)

  "They allow Snowmass conveners to see what proposals to expect and to encourage the community to begin studying them. They will help conveners to prepare the Snowmass Planning Meeting that will take place on November 4 - 6, 2020 at Fermilab. Letters should give brief descriptions of the proposal and cite the relevant papers to study. Instructions for submitting letters are available at https://snowmass21.org/loi.

  Authors of the letters are encouraged to submit a full write-up for their work as a contributed paper."

  - ➔ Very brief (two pages).
  - ➔ Uploaded by Authors through Snowmass 2021 Wiki.
  - ➔ Index of submitted LOI available on the Snowmass 2021 Wiki.
  - ➔ Could represent existing work (cite) or new ideas.
  - ➔ Will help the EF conveners plan the work of the Frontier (including liaisons with other Frontiers: avoid duplication/build synergy).
  - ➔ If further developed in the context of the Snowmass 2021 exercise could lead to a Contributed Paper.

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Proposed LOIs

Currently expressed interest:

- Dark Matter – B. Jayatilaka
- Multi-bosons – J. Berryhill
- Higgs self-coupling - P. Bhat
- Strong SUSY – J. Hirschauer
- Higgsinos – A. Canepa
- Higgs properties - S. Jindariani/P. Bhat

Issues/questions to discuss:

- The idea is to establish several working groups each focusing on a particular topic/LOI
- A lot of studies have been done for the ESPP. We reviewed many white papers last year. The first step work involves some archeology. In some cases, it may also be the last step
- For completed ESPP studies, is there room for improvement? Higher energy/lumi? New approach/technique? New detector technologies?
- The EF conveners expect that the new studies have to use the same frameworks as the original ESPP studies (same assumptions, apples to apples comparison)
  - Learning curve. Framework maturity and documentation? Samples?
  - LPC can provide help with computing resources (storage, CPU, etc)

Recent Publications

Nature Focus issue dedicated to future of HEP (ESPP):

- https://www.nature.com/collections/heigibehfc

- This Focus issue outlines the main proposals under consideration for the 2020 update to the strategy

- **Particle physics at accelerators in the United States and Asia** **Pushpalatha C. Bhat** & **Geoffrey N. Taylor** *Nature Physics* **volume 16**, pages 380–385(2020)

Issues/questions to discuss:

- Many parameters collider type (pp, ee, mm), energy, luminosity, detector design… Clearly, we cannot cover everything.
- How specific should we be?
  - Target a particular proposed collider? (note: some topics may be applicable to all the machines)
  - A subset of colliders?
  - A scan of Energy/Luminosity
  - Propose a new machine?
- We are one lab, it would be nice to have a common goal