

# EIC Opportunities for Snowmass

Abhay Deshpande (SBU), Ciprian Gal (SBU),  
Swagato Mukherjee (BNL) and Yen-Jie Lee (MIT)

EIC Opportunities for Snowmass  
January 23, 2020



# Workshop: EIC Opportunities for Snowmass

- Goal: Summarize and document Electron Ion Collider (EIC) related science that have been discussed within the SnowMass2021 process so far.
- An updated and expand version of this document based on the future discussion will become the EIC Proceedings as part of the SnowMass2021 document
- This event is also part of the CFNS workshop/ad-hoc meeting series.

# Snowmass Delay

## Delay of Snowmass process is now official

- A number of large construction projects based on 2014 P5 recommendations, got delayed due to COVID-19 pandemic. As a result, the original P5 timeline is relaxed.
- **The Snowmass report will be delayed by one year** and the overall schedule for the Snowmass process will be adjusted accordingly.
- The new Snowmass timeline includes:
  - Preliminary Topical Group Reports – Spring 2022
  - Preliminary Frontier Reports – late Spring 2022
  - Snowmass Community Summer Study – Summer 2022 in University of Washington, Seattle
  - Snowmass Book – October 2022
  - The deadline for contributed papers will be delayed but the specific date will be decided by January 2021. Originally scheduled frontier-level Spring 2021 workshops will be moved to later times.
- Please see the announcement in this wiki page:
  - <https://snowmass21.org/announcements>

# Plan and EIC workshop this week

- Since a large part of the development is connected to the timeline for EIC Yellow Report, we proceed with this important EIC Workshop to take a snapshot of the status
- The new Snowmass schedule could have possible overlap with the preparation for the Nuclear Physics Long Range Plan (timeline unknown)
- Our goal is to finish ~80% of the ground works while take advantage of the new timeline for further developments and updates.
- We have 5 days of workshop this week: 11AM – 3 PM Eastern Time
  - Monday: EW & BSM Physics
  - Tuesday: Hadron Tomography at EIC and HEP
  - Wednesday: Jets at EIC
  - Thursday: Gluon Saturation at EIC
  - Friday: Heavy Flavor at EIC

# Thank You



## EIC opportunities for Snowmass

25-29 January 2021

Online

US/Eastern timezone

### Overview

Call for Abstracts

Reviewing Area

Timetable

Contribution List

Participant List

Remote Connection (via ZOOM)

### Contact

✉ [cfns\\_contact@stonybrook.edu](mailto:cfns_contact@stonybrook.edu)

✉ [ciprian.gal@stonybrook.edu](mailto:ciprian.gal@stonybrook.edu)

✉ [swagato@bnl.gov](mailto:swagato@bnl.gov)

✉ [Yen-Jie.Lee@cern.ch](mailto:Yen-Jie.Lee@cern.ch)

The goal of this workshop is to summarize and document Electron Ion Collider (EIC) related science that have been discussed within the SnowMass2021 process so far. An updated and expanded version of this document based on the future discussions will eventually become the summary of the EIC related contributions to SnowMass2021.

**Due to the COVID-19 virus, we will hold the workshop online using Zoom. Link:**

<https://mit.zoom.us/j/96805844190?pwd=cGg5eWVYTETlQ0hEWWsrR3N0Q09YUT09>

**This event is part of the CFNS workshop/ad-hoc meeting series. See the [CFNS conferences](#) page for other events.**

**Program Committee:** Yulia Furletova, Ciprian Gal, Claire Gwenlan, Salvatore Fazio, Timothy Hobbs, Alexey Prokudin, Alessandro Vicini, Miguel Arratia, Zhong-Bo Kang, Stefan Prestel, Ivan Vitev, Xin Dong, Stephen Sekula, Tuomas Lappi, Soeren Schlichting, Renaud Boussarie, Bjoern Schenke,

**Advisory Committee:** Michael Begel, Stefan Hoeche, Michael Schmitt, Huey-Wen Lin, Pavel Nadolsky, Christophe Royon



**Starts** Jan 25, 2021, 10:00 AM

**Ends** Jan 29, 2021, 4:00 PM

US/Eastern



Online



[Abhay Deshpande](#)  
[Ciprian Gal](#)  
[Swagato Mukherjee](#)  
[Yen-Jie Lee](#)



There are no materials yet.

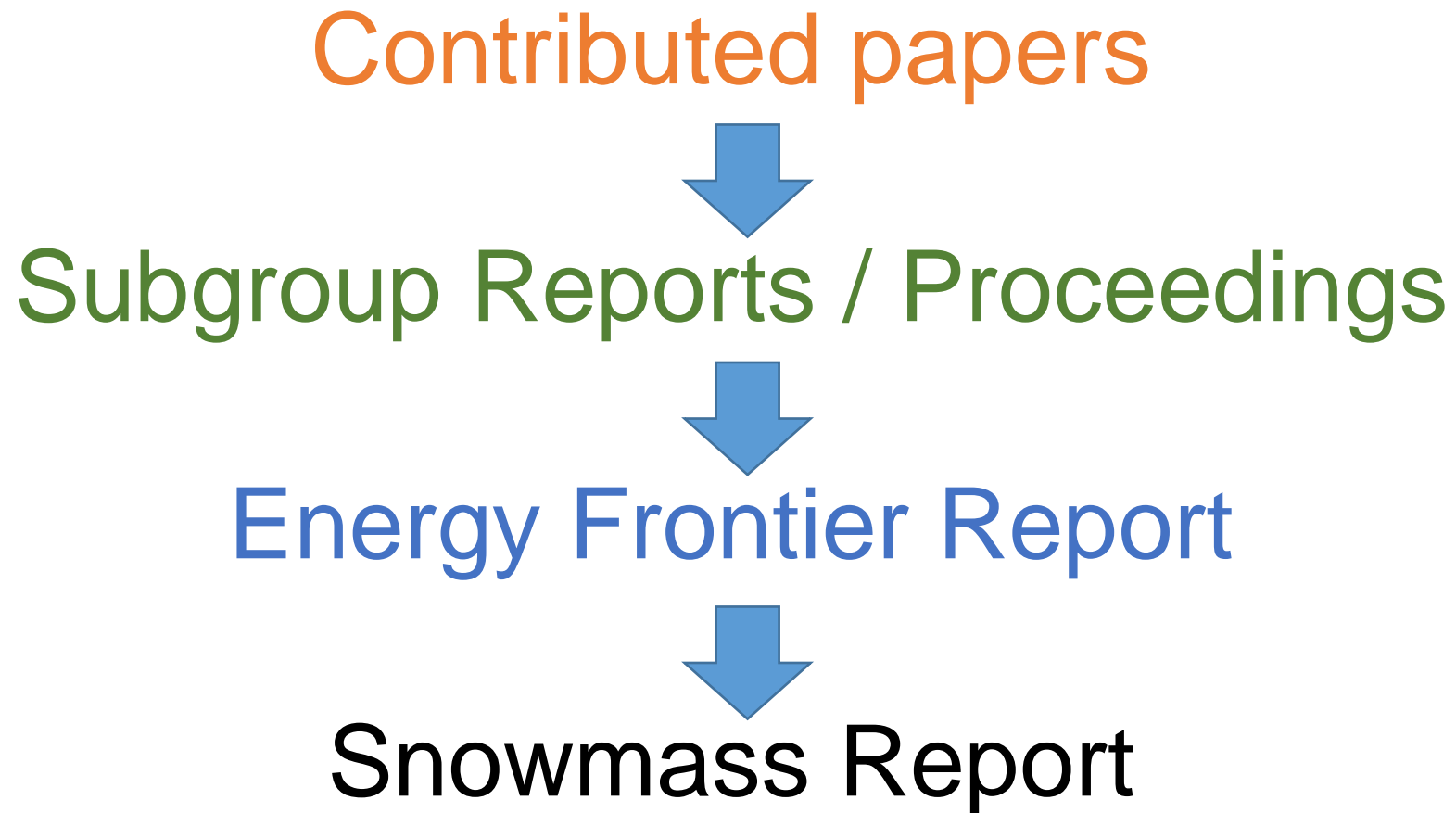


- Backup slides

# Snowmass Report

- Page Length: ~500 pages
  - audience: Snowmass community including P5 Committee
1. Snowmass Summary Report (~50 pages)
  2. Frontier Summaries (~400 pages with 10 Frontiers)
  3. Multi-Frontier Topic Summaries (~50 pages)

# Structure





# Snowmass Summary Report

- Page Length - ~50 pages
- audience: Snowmass community, science community, funding agencies
- Content:
  1. Executive Summary: ~10 pages including 2-page Intro for the public
  2. Introduction
  3. 10 Frontier Executive Summaries
  4. Executive Summaries of Multi-Frontier Topics
  5. Conclusion

# Frontier Report

- audience: Frontier / Topical Group Snowmass community
- Each Frontier Report consists of
  1. **Frontier Summary:**
    - < ~50 pages (including “Subgroup” summaries, a few pages from each subgroup)
    - **FOR EF:** group “subgroup” the summaries according to broad themes: EWK, Strong Interactions, BSM and Heavy Ions, addressing also the overlaps across them.
    - **Authors:** EF conveners and EF-TG conveners
  2. **Subgroup Group Reports**

# LoI @ EIC

- **LoI submission coordinators assigned**
  - **Heavy Flavor @ EIC:** Xin Dong (LBL), Stephen Sekula (SMU), Ivan Vitev(LANL)
  - **Proton tomograph @ EIC for HEP applications:** Timothy Hobbs (SMU), Salvatore Fazio (BNL), Alexey Prokudin (PSU), Alessandro Vicini (Milan)
  - **Gluon saturation @ EIC:** Tuomas Lappi (Jyvaskyla), Soeren Schlichting (Bielefeld), Renaud Boussarie (BNL), Bjoern Schenke (BNL)
  - **EW&BSM @ EIC:** Yulia Furletova (JLAB), Ciprian Gal (SBU), Claire Gwenlan (Oxford)
  - **Jets @ EIC:** Miguel Arratia (UCR), Zhong-Bo Kang (UCLA), Stefan Prestel (Lund)
- **Discussed on August 4<sup>th</sup>**
- **Follow up discussion on August 21**

- **LoI submission coordinators assigned**
  - Search for New Physics with Heavy Ion Beam: Marco Drewes (Theory) and Andrea Giammanco (CMS).
  - Quarkonia and exotic hadron production in relativistic heavy ion collisions: Matthew Durham (LHCb) and Xiaojun Yao (Theory)
  - Ultra Peripheral Heavy Ion Collisions: Zhangbu Xu (STAR), Jian Zhou (Theory), Mariusz Przybycien (ATLAS/ZEUS)
  - High Density QCD in Small Collision Systems: Jaki Noronhahostler (Theory), Wei Li (CMS/STAR), Dennis Perepelitsa (ATLAS/sPHENIX)
  - Heavy Flavor Production in Heavy Ion Collisions: Gian Michelle Innocenti (ALICE), Jing Wang (CMS), Jin Huang (sPHENIX)
  - Jet and Jet Substructure in Heavy Ion Collisions: James Mulligan (ALICE), Leticia Cunqueiro Mendez (ALICE), Yi Chen (CMS), Anne Sickles (ATLAS)
  - EW Physics in Heavy Ion Collisions and the Impact to nuclear PDF: Hannu Paukkunen (Theory), Georgios Krintiras (CMS) and Emilien Champon (CMS)
- Discussed on 8/20.