

Advances in Event Generation and Detector Simulation

Snowmass Community Planning Meeting

[Wednesday, October 7, 1:00pm – 2:30pm Fermilab time](#)

Krzysztof Genser, Stefan Hoeche, Fabio Maltoni, Vincent Pascuzzi, Jesse Thaler

Schedule & Expectations

SnowMass2021

Format: 9 **brief presentations** (5 minutes each! max 3 slides!)
~40 minutes of **open discussion**
(Zoom room will stay active for additional ~30 minutes)

Asynchronous
Feedback: Type your comments/questions into the **Zoom chat**
Enter your ideas in a [shared Google doc](#)

Synchronous
Feedback: Raise your **blue Zoom hand** during open discussion
Be mindful about not monopolizing time or veering off topic

Goals: Spark **cross-cutting dialogue** about the future of our field
Collect **forward-looking ideas** for Energy/Comp/Neutrino/Theory Frontiers
Motivate a possible **future Snowmass mini-workshop** on this topic
Inspire you to contribute to Snowmass process (esp. [contributed papers](#))

Requirement: Adherence to the APS DPF [Core Principles and Community Guidelines](#)

DPF Core Principles and Community Guidelines (CP&CG)

- By participating in this meeting, you agree to adhere to the CP&CG
 - **Respect and support community members**
 - **Commit to constructive dialogue and take initiative**
 - Details of what this means, expectations for behavior, and accountability procedures are provided in the CP&CG document linked at:
<https://snowmass21.org/cpcg/start>
- Everyone is invited to invoke the CP&CG as needed to encourage constructive and supportive collaboration
- The conveners of this meeting are your recommended first point of contact for reports of CP&CG violations occurring here
 - The conveners have received training in the CP&CG and how to handle reports
 - The CP&CG accountability procedure is designed to encourage early intervention and is flexible enough to appropriately address issues ranging from the discourteous to the egregious
 - Please do not hesitate to contact us!
- Snowmass is most successful when everyone's voice can be heard!

Today's Session

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*Nine perspectives on current challenges and future opportunities
in event generation and detector simulation*

Collider Event Generation

- **Josh McFayden:** Computational challenges for event generation in view of HL-LHC and beyond
- **Enrico Bothmann:** State-of-the-art event generators via new techniques and technologies

Precision Considerations

- **Giulia Zanderighi:** Event generators for NNLO/NLL and beyond
- **Stefan Prestel:** Electroweak effects and/or multi-boson processes

Detector Simulation

- **Kevin Pedro:** Machine learning for detector simulations
- **Julia Yarba:** Systematic effects in detector simulations

View from Neutrino Physics

- **Noemi Rocco:** Physics opportunities in neutrino event generation
- **Steven Gardiner:** Computational challenges for neutrino event generators

Computational Foundations

- **Charles Leggett:** Leveraging new computational architectures and strategies

Speaker instructions: “articulate a key challenge in your topic area and possible avenues for future advances; spark lively discussion and inspire attendees; no time to be comprehensive”