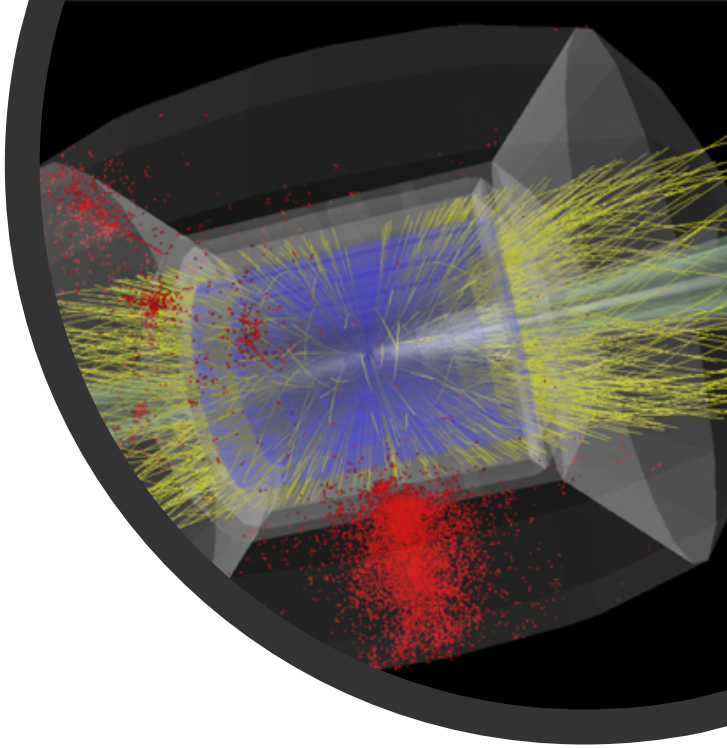

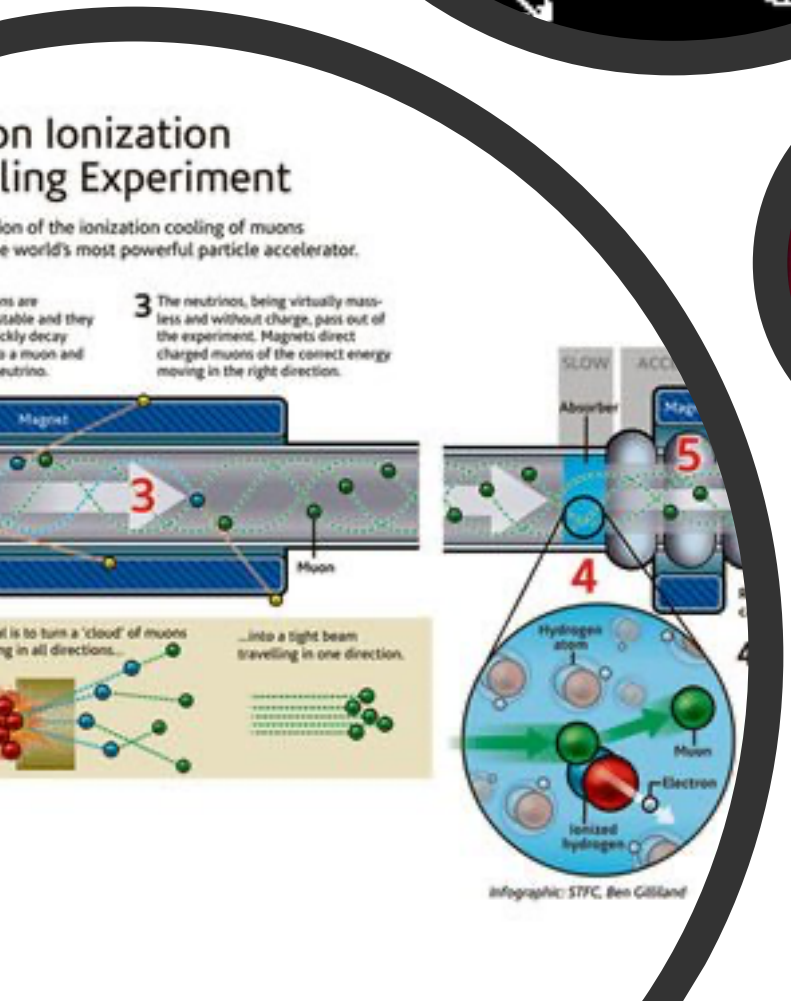

Sridhara Dasu, Sarah Demers

Introduction

Purpose of Today's Meeting

- There is a vibrant community that has been working toward muon colliders for many years, from
  - exploring the physics motivation to
  - researching the technical challenges
- In just the past week there have been multiple meetings devoted to this! But not all members of the energy frontier have had time to engage, particularly since the results of the previous Snowmass shut several doors domestically.
- We've reached out broadly to energy frontier Pis, and provided this opportunity
  - for people who haven't had time to engage to catch up a bit regarding the ongoing work
  - to try to gauge the level of community excitement behind this idea

There are many ongoing efforts, demonstrating significant excitement within the community!

EF01 Working Group Meeting: Higgs at muon colliders

Today!

Thursday Dec 10, 2020, 10:00 AM → 12:00 PM US/Eastern

Andrey Korytov (University of Florida), Caterina Vernieri (SLAC), Sally Dawson (Brookhaven National Laboratoy)

Description https://stanford.zoom.us/j/3200397722?pwd=aUtBTFhadHdtVUFlZGxzV3ZNYkNEQT09

Password: 239843 Or iPhone one-tap (US Toll): +18333021536,,3200397722# or +16507249799,,3200397722#

10:00 AM → 10:10 AM	**Updates**		10m
10:10 AM → 10:30 AM	**Study of Higgs couplings and self-couplings precision**	**Speaker**: Lorenzo Sestini	20m
10:30 AM → 10:40 AM	**Discussion**		10m
10:40 AM → 11:00 AM	**Physics Potential**	**Speaker**: Andrea Wulzer (University of Padova)	20m
11:00 AM → 11:10 AM	**Discussion**		10m

International Muon Collider Design Study | HOME | COLLABORATION | ORGANISATION | PUBLICATIONS | CALENDAR | DESIGN | USEFUL LINKS

Welcome

International Muon Collider Design Study

Muon colliders have a great potential for high-energy physics. They can offer collisions of point-like particles at very high energies, since muons can be accelerated in a ring without limitation from synchrotron radiation. However, the need for high luminosity faces technical challenges which arise from the short muon lifetime at rest and the difficulty of producing large numbers of muons in bunches with small emittance. Addressing these challenges requires the development of innovative concepts and demanding technologies.

The Update of the European Strategy for Particle Physics recommended to integrate an international design study for a muon collider in the European Roadmap for accelerator R&D.

In response to this, the Laboratory Directors Group, which represents the large European Particle Physics Laboratories has initiated an International Muon Collider Collaboration to study the concept

Muon Collider chat

Thursday 3 Dec 2020, 20:00 → 21:40 Europe/Zurich

Sergo Jindariani (Fermi National Accelerator Lab. (US))

Description https://cern.zoom.us/j/4098577725?pwd=d2FjRmE1T3Jac1dybmJ4T051c0NpUT09

20:00 → 20:10	**News**	**Speaker**: All	10m
20:10 → 20:40	**Machine-detector interface studies for the Muon Collider**	**Speaker**: Nikolai Mokhov (Fermi National Accelerator Lab. (US)) MC_MDI_Mokhov_D...	30m
20:40 → 21:00	**Discussion/AOB**		20m

Last Week!

PITT PACC Workshop: Muon collider physics

30 November 2020 to 2 December 2020
University of Pittsburgh
US/Eastern timezone

Search...

Last Week!

- Overview
- Timetable
- Contribution List
- Registration
- Participant List

Support
bcarlson@cern.ch
kex10@pitt.edu

This virtual workshop will be focused on muon collider physics and comparison with the other next generation colliders for physics potential.

ZOOM VIDEO CONFERENCE:
https://pitt.zoom.us/j/99311942431

Meeting ID: 993 1194 2431

LOCAL ORGANIZERS: Ben Carlson, Tao Han, Brian Batell, Ayres Freitas, Keping Xie, Cedric Weiland

EXTERNAL ORGANIZERS: Xing Wang

ADMINISTRATOR: Joni George

The Context

- While there are different perspectives on how muon colliders might fit into the future HEP landscape, we are thinking
  - Beyond the HL-LHC
  - Beyond a potential ILC Higgs factory
  - Toward multi-higgs and BSM physics with a $\geq$3 TeV muon collider
- Another Goal: To better understand if there is consensus on this approach from other community members
- Additional Goal: If there are people attending today, or who come across these slides, who haven't yet been engaged, we want to be sure to provide entry points for people to get involved.

Note: a #muon-collider-forum slack channel has been created in the Snowmass Slack, governed jointly by the accelerator, energy, and theory frontiers

Do we have critical mass for a US-subgroup of the International Muon Collider Effort focused on muon colliders and detector design?

Clearly, R&D toward a multi-TeV muon collider is a critical component.

There are unique detector challenges in the muon-collider environment.

Are young people sufficiently energized by and engaged with this?