Welcome and introduction

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Muon Collider Workshop
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Muon Colliders in the last decade

- Between 2011-2016 the MAP collaboration was formed to address key feasibility issues of a Muon Collider
  - Leveraged prior decades of study to identify a design path. Focused on a proton-driver based solution
  - Significant progress in all accelerator aspects
  - Demonstration of ionization cooling
- MAP was terminated in 2016 and most related work paused
  - All past work is documented at a dedicated section at Journal of Instrumentation

Recent Muon Collider work

- Meantime, increasingly growing interest in muon colliders from the particle physics community, especially in Europe.
- Formation of International Muon Collider Collaboration (IMCC) on the works.
- In Europe, CERN Council has charged the Laboratory Directors Group to develop the Accelerator R&D Roadmap for the next decade. Muon Colliders are considered.
  - Three community meetings organized with the goal to define the needed muon R&D with deliverables and demonstrators
  - Strong participation from US scientists in these meetings – many served either as conveners or panel members

The birth of the Muon Collider Forum

- The Snowmass Energy, Theory and Accelerator Frontier Conveners have created a Muon Collider Forum to provide input to Snowmass on the muon collider based on the high level of interest shown recently
- The intention of this informal organization is to not compete with other efforts but to have a US driven component.
- Two coordinators from each frontier involved on this effort
- Since January of 2021, Muon Forum meets on a monthly basis and has invited several experts in the field to give presentations

Moving Forward (1)

- Muon Collider forum goal is to produce a Muon Collider Forum Report for Snowmass.
- This joint AF/EF/TF Report will serve as a document summarizing the strong interest and support for a muon collider within the US HEP community.
- It will help to identify key areas where US can provide critical contributions to the global muon collider R&D efforts.
- Finally, it will present the concept of the "Fermilab Site-Filler" as one of options for hosting such a machine in the future.
- The Report will also be useful for the Snowmass frontier summaries and possibly P5 deliberations.

Moving Forward (2)

- We are hosting this workshop today to get the best possible feedback for writing this report
- The emphasis will be the accelerator part.
- This workshop is by invitation only, many of you are experts in sub-research areas in MAP organization, and we expect you to help us with the report.
- In addition, we also invite speakers from non-MAP to give us their perspectives.

Agenda for today and tomorrow

WEDNESDAY, JANUARY 26

10:00 AM → 10:10 AM	**Welcome and introduction** Speaker: Diktys Stratakis (Fermi National Accelerator Laboratory)	10m
10:10 AM → 10:30 AM	**Possible elements of the US plan toward a Muon Collider** Speaker: Vladimir Shiltsev (FNAL) Elements_US MC_pl...	20m
10:30 AM → 10:50 AM	**Physics motivation for a MC** Speaker: Patrick Meade (Stony Brook University)	20m
10:50 AM → 11:20 AM	**MC Site filler** Speaker: David Neuffer (Fermilab)	30m
11:20 AM → 11:50 AM	**Targetry and cooling for a MC** Speaker: Katsuya Yonehara (Fermilab)	
11:50 AM → 12:10 PM	Coffee B	
12:10 PM → 12:40 PM	**Muon Acceleration** Speaker: J. Scott Berg (Brookhaven National Laboratory)	
12:40 PM → 1:10 PM	**Challenges on high field magnets** Speaker: Alexander Zlobin (Fermilab)	
1:10 PM → 1:40 PM	**NCRF and SRF technology and MC needs** Speaker: Tianhuan Luo (LBL)	
1:40 PM → 2:00 PM	**Discussion**	

THURSDAY, JANUARY 27

9:00 AM → 9:25 AM	**MDI** Speaker: Nadia Pastrone (INFN-Torino)	25m
9:25 AM → 9:50 AM	**MC neutrino-induced radiation and its mitigation** Speaker: Nikolai Mokhov (Fermilab)	25m
9:50 AM → 10:15 AM	**Radiation mitigation in the collider ring** Speaker: Christian Carli (CERN)	25m
10:15 AM → 10:40 AM	**Synergy with European MC efforts** Speaker: Daniel Schulte (CERN)	25m
10:40 AM → 11:00 AM	Coffee Break	20m
11:00 AM → 12:00 PM	**MC forum white paper discussion**	1h
12:00 PM → 12:30 PM	**Muon-ion Collider** Speaker: Wei Li (Rice University)	30m
12:30 PM → 1:00 PM	**Open discussions of Muon-Ion Collider**	30m

Thank you

- Thanks to the Muon Forum coordinators for their support:

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- Special thanks to Scott Berg, Dave Neuffer, Katsuya Yonehara for helping with the organization
- Thank you all for participating!