

International
UON Collider
Collaboration



MuCol

Funded by the European Union (EU). Views and opinions expressed are however those of the author only and do not necessarily reflect those of the EU or European Research Executive Agency (REA). Neither the EU nor the REA can be held responsible for them.



Workshop goals and practical information

A. Lechner and D. Lucchesi,
IMCC & MuCol MDI Workshop 2024
March 11, 2024

Welcome!



IMCC and MuCol MDI workshop 2024

International UON Collider Collaboration

Mar 11 – 12, 2024
CERN
Europe/Zurich timezone

Enter your search term

- Overview
- Timetable
- Contribution List
- Registration
- Participant List
- Scientific Programme Committee
- IMCC and MuCol Annual Meeting 2024
- Acknowledgements



MuCol - A Design Study for a Muon Collider complex at the 10 TeV centre-of-mass energy is a European funded project devoted to high-energy muon collision studies. One of the work packages is dedicated to the investigation of the beam-induced background effects on the detector and to the definition of a detector including its performance.

The workshop will report on the progress of the MDI and interaction region design for the 3 TeV and 10 TeV muon colliders, reviewing conceptual and technical challenges. Past achievements will be summarized and open points as well as plans for future studies will be highlighted.

The workshop will also provide a summary of the detector design studies, with particular focus on the technology R&D required to mitigate the effect of the beam-induced background on the physics object reconstruction performance.

Indico page:

https://indico.cern.ch/e/mucol_mdi_2024

The workshop will be held in hybrid mode
(zoom link can be found on website)

Please always use the microphone in the
meeting room

Big thanks to Michela for helping with the
workshop organization!



Scientific Program Committee:
Christian Carli (CERN)
Karri DiPetrillo (Univ of Chicago)
Sergo Jindariani (Fermilab)
Anton Lechner (CERN)
Donatella Lucchesi (Univ and INFN Padova)

Workshop program

Monday afternoon (13h45-18h00):

13:45	Welcome 6/2-024 - BE Auditorium Meyrin, CERN 13:45 - 14:00
14:00	Setting the scene <h2><u>Session 1: Setting the scene</u></h2> 6/2-024 - BE Auditorium Meyrin, CERN 14:00 - 15:30
15:00	Coffee 6/2-024 - BE Auditorium Meyrin, CERN 15:30 - 15:50
16:00	MDI and IR design <h2><u>Session 2: MDI and IR design</u></h2> 6/2-024 - BE Auditorium Meyrin, CERN 15:50 - 18:00
18:00	

Tuesday morning (8h30-12h30):

09:00	MDI and IR design <h2><u>Session 2: MDI and IR design</u></h2> 6/2-024 - BE Auditorium Meyrin, CERN 08:30 - 09:25
10:00	Detector design and forward physics <h2><u>Session 3: Detector & forward physics</u></h2> 6/2-024 - BE Auditorium Meyrin, CERN 09:25 - 10:20
11:00	Coffee 6/2-024 - BE Auditorium Meyrin, CERN 10:20 - 10:40
11:00	Detector design and forward physics <h2><u>Session 3: Detector & forward physics</u></h2> 6/2-024 - BE Auditorium Meyrin, CERN 10:40 - 11:30
12:00	Round table discussion and wrap-up <h2>Discussion and wrap-up</h2> 6/2-024 - BE Auditorium Meyrin, CERN 11:30 - 12:30

Followed at **14h00** by **IMCC and MuCol annual meeting** in the main auditorium (bldg 500)

Workshop topics

Thanks to all the speakers!

Monday afternoon (13h45-18h00):

	Workshop opening by the IMCC study leader	Daniel Schulte
	6/2-024 - BE Auditorium Meyrin, CERN	13:45 - 13:50
	Workshop goals and practical information	Anton Lechner
	6/2-024 - BE Auditorium Meyrin, CERN	13:50 - 14:00
14:00	Wish list from the physics side (20+10)	Cari Cesarotti
	6/2-024 - BE Auditorium Meyrin, CERN	14:00 - 14:30
	MDI and IR design, detectors	Anton Lechner
	6/2-024 - BE Auditorium Meyrin, CERN	14:30 - 15:00
15:00	Detector requirements and background mitigation	Donatella Lucchesi
	6/2-024 - BE Auditorium Meyrin, CERN	15:00 - 15:30
	Coffee	
	6/2-024 - BE Auditorium Meyrin, CERN	15:30 - 15:50
16:00	Recap of 3 TeV lattice and IR design studies in MAP (15+10)	Eliana Gianfelice
	6/2-024 - BE Auditorium Meyrin, CERN	15:50 - 16:15
	Status of IR lattice design & IR magnet technologies	Kyriacos Skoufaris
	6/2-024 - BE Auditorium Meyrin, CERN	16:15 - 16:40
	Magnet technologies	BARBARA CAIFFI et al.
	6/2-024 - BE Auditorium Meyrin, CERN	16:40 - 17:05
17:00	Material and engineering considerations for the nozzle (15+10)	Rui Franqueira Ximenes
	6/2-024 - BE Auditorium Meyrin, CERN	17:05 - 17:30
	Experiences with nozzle engineering aspects	Robert Miller
	6/2-024 - BE Auditorium Meyrin, CERN	17:30 - 17:55

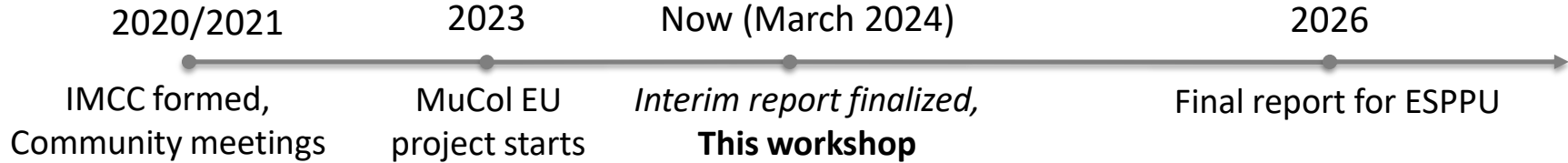
Tuesday morning (8h30-12h30):

	Software background studies and MDI design	Daniele Calzolari
	6/2-024 - BE Auditorium Meyrin, CERN	08:30 - 09:00
09:00	MDI and IR design, detectors	Luca Castelli
	6/2-024 - BE Auditorium Meyrin, CERN	09:00 - 09:25
	Detector requirements and background mitigation	Simone Pagan Griso
	6/2-024 - BE Auditorium Meyrin, CERN	09:25 - 09:50
10:00	Software background studies at detector level (20+10)	Nazar Barak
	6/2-024 - BE Auditorium Meyrin, CERN	10:00 - 10:20
	Coffee	
	6/2-024 - BE Auditorium Meyrin, CERN	10:20 - 10:40
	Forward physics	Daniele Calzolari et al.
	6/2-024 - BE Auditorium Meyrin, CERN	10:40 - 11:05
11:00	Detector magnet	Andrea Bersani
	6/2-024 - BE Auditorium Meyrin, CERN	11:05 - 11:30
	Round table	
	6/2-024 - BE Auditorium Meyrin, CERN	11:30 - 12:30
12:00		

We reserved **10 min** for questions & discussion after each talk!



MDI workshop goals



- Important deliverable (**interim report**) was completed recently
- It is time to look back and summarize the achievements, but also the open points and challenges
- At the same time, we should review the goals for the **final report for ESPPU** in 2026
- The workshop comes in a timely manner, just after the final P5 report in the US, which advocates a muon collider – the workshop is an ideal venue for newcomers to get an overview of the MDI work
- The workshop shall also provide a forum for discussing new ideas

This workshop is also a milestone (Milestone No 10) in MuCol (<https://mucol.web.cern.ch/milestones>)

Practical information

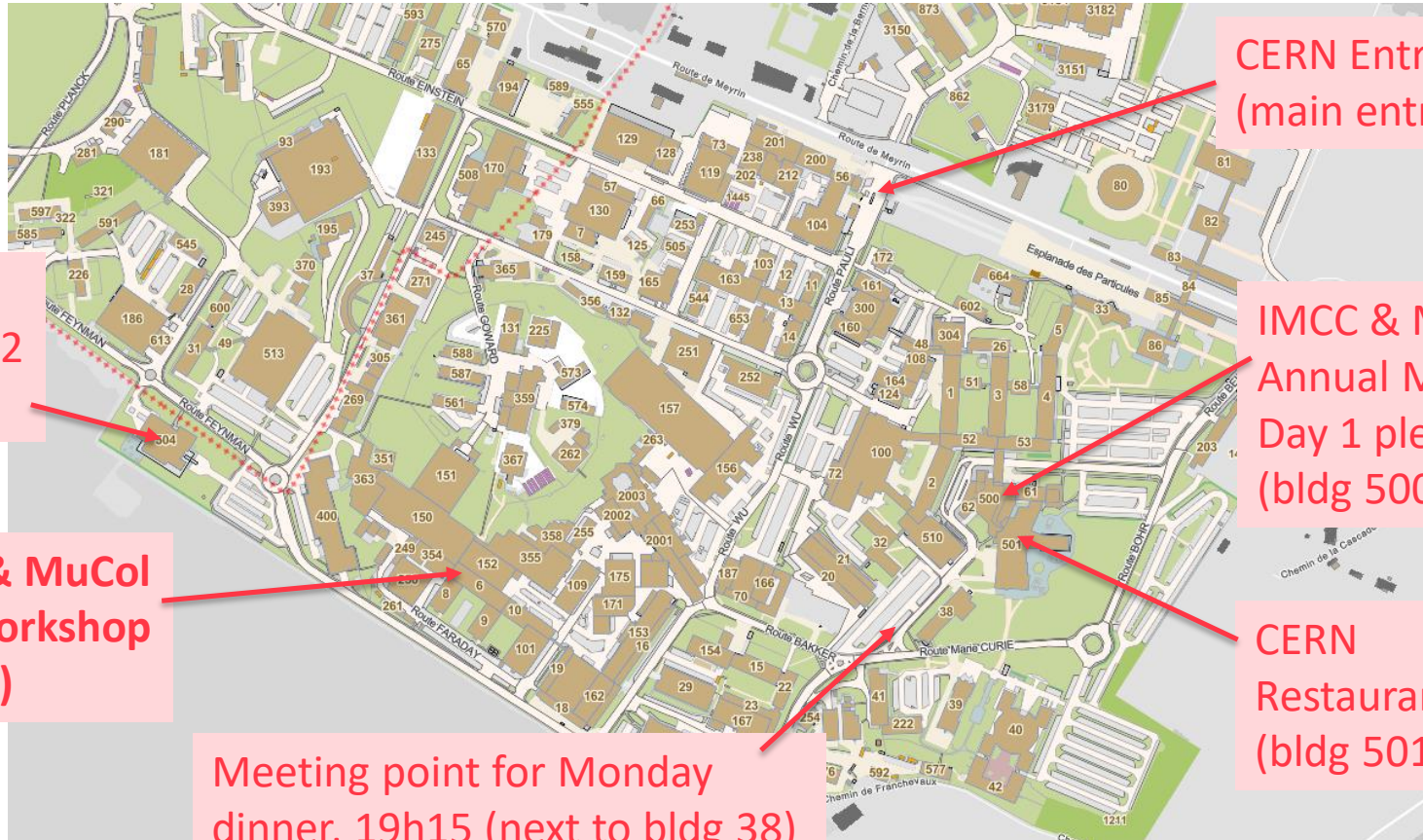
- **Coffee breaks:**
 - Downstairs in front of the PS cafeteria (1st floor)
- **Workshop photo:**
 - Would like to make group photo on **Tue 10h20** at the beginning of the coffee break
- **Workshop dinner:**
 - We organized a dinner today at **19h30** at **Andiamo Val Thoiry** (about a 15 min car ride from CERN - not easily accessible by foot)
 - Car sharing is possible: meeting point at **19h15** next to the CERN hostels for those who need a ride (next to building 38) – please be there in time
 - *Note: participants have to pay for themselves – we tried to avoid a workshop fee and can unfortunately not offer the dinner*
 - **We had to pre-book – I hope everybody who wants to join filled in the form**



International
UON Collider
Collaboration

Finding your way around

<https://maps.cern.ch>



CERN Entrance B
(main entrance)

CERN
Restaurant 2
(bldg 504)

IMCC & MuCol
Annual Meeting
Day 1 plenaries
(bldg 500)

IMCC & MuCol
MDI workshop
(bldg 6)

CERN
Restaurant 1
(bldg 501)

Meeting point for Monday
dinner, 19h15 (next to bldg 38)

Have a nice and fruitful workshop!

