IMCC and MuCol annual meeting 2025



Report of Contributions

What is the length of the muon co...

Contribution ID: 1

Type: Poster

What is the length of the muon complex anyway?

Tuesday 13 May 2025 19:10 (20 minutes)

It's 65 km. Find out why :)

What category does your poster fit in?

Other

Primary author: TAYLOR, Rebecca (CERN)Presenter: TAYLOR, Rebecca (CERN)Session Classification: Poster

Type: Poster

Lattice Design of Pulsed Synchrotron Rings for a Fermilab Sited Muon Collider

Tuesday 13 May 2025 19:10 (20 minutes)

We present a preliminary lattice design for a series of pulsed synchrotron rings to accelerate muon beams to their maximum collision energy at Fermilab. The rings are limited to a circumference of 15.5 km, which would allow them to fit just within the Fermilab site boundary. We wish to estimate the maximum energy that muons can be accelerated to on the Fermilab site based on a realistic lattice layout for the synchrotron chain. We consider the feasibility of beginning the synchrotron chain with Tevatron sized (6.28 km circumference) rings. To achieve high average fields, superconducting fixed field magnets are interleaved with iron-dominated magnets whose fields are rapidly ramped from negative to positive. We consider which rings in the acceleration chain benefit from using dipole and quadrupole magnets interleaved in this fashion. Multiple RF stations are required to ensure that the beam energy and the magnet fields are reasonably well synchronized and to avoid longitudinal losses due to the large synchrotron tune. We use FODO arc cells with dispersion suppressed into the RF straights. We will discuss tradeoffs between maximum energy, energy range, and muon decays.

What category does your poster fit in?

Acceleration

Primary authors: Dr BERG, J Scott (Brookhaven National Laboratory); CAPOBIANCO-HOGAN, Kyle (Stony Brook University)

Presenter: CAPOBIANCO-HOGAN, Kyle (Stony Brook University)

Type: Poster

Recent Progress on the RF Cavities with Beam Windows for the Future Muon Collider Ionization Cooling Channel

Tuesday 13 May 2025 19:10 (20 minutes)

Muon collider (MuC) is a promising, yet challenging, pathway to achieve a 10TeV collider at the energy frontier. The current MuC design requires ionization cooling to shrink the beam emittance and accomplish the target luminosity. One key component in the ionization cooling channel is the NCRF cavity which replenishes the longitudinal energy and provides the longitudinal focusing. Overcoming the limit on the cavity gradient imposed by the surrounding strong magnetic field is critical for the performance of the MuC. One unique feature of this cavity is the thin beam window covering the cavity aperture. The beam window increases the cavity shunt impedance and reduces RF breakdown probability. In this poster, we will present recent study progress on two effects of the beam window, the emittance growth due to the scattering and the wakefield enhanced by the closed aperture.

To study the muon scattering in the beam window and the resulting emittance dilution, we use GEANT4 simulation with analytical benchmarking. We simulate the window at different stages in the rectilinear cooling lattice, and it is shown that the scattering effect is negligible at the early stages and becomes significant in the later stages of the post-merging section. The comparison between two window materials, Be and Al, indicates the Al window needs to be at about a quarter of the thickness of the Be window to have the same amount of emittance dilution.

We also show that with the beam aperture completely covered by the window, the CST wakefield solver is no longer suitable for this calculation. Instead, we deploy the CST PIC solver to calculate the EM field generated by the muon beam passing through the cavity and use post-processing methods to resolve the wake potential with a Python wrapper script. The wakefields due to the cavity geometry and the beam space charge are separately characterized.

What category does your poster fit in?

Acceleration

Primary authors: MERENICH, Dillon (Northern Illinois University); LUO, Tianhuan (Lawrence Berkeley National Laboratory); Dr LU, Xueying (Argonne National Laboratory)

Presenter: LUO, Tianhuan (Lawrence Berkeley National Laboratory)

Update of a green field proton driv...

Contribution ID: 5

Type: Poster

Update of a green field proton driver design

Tuesday 13 May 2025 19:10 (20 minutes)

I will show a current design of a green field proton driver. It uses a flexible momentum compaction factor lattice. The momentum compaction is optimised in accumulator and compressor rings separately. Space charge effects during the bunch rotation will be estimated in the longitudinal and transverse directions. Possible beam experiments to demonstrate a bunch rotation with the high intensity effects are proposed.

What category does your poster fit in?

Proton Driver

Primary author: MACHIDA, Shinji (STFC RAL)

Presenter: MACHIDA, Shinji (STFC RAL)

Type: Poster

Bernd Stechauner: Final Cooling: Cell to cell beam transfer and re-acceleration

Tuesday 13 May 2025 19:10 (20 minutes)

This study explores the implementation of an RF re-acceleration structure positioned between two final cooling cells. Various cavity configurations are analyzed under specific RF parameters to optimize the longitudinal beam dynamics. A detailed examination of the longitudinal phase space evolution within these RF systems is conducted, aiming to prepare the beam energy and adjust the energy spread to achieve optimal conditions for the subsequent final cooling cell. Additionally, solenoids placed between RF cavities ensure effective transverse beam guidance, further improving overall performance.

What category does your poster fit in?

Muon Cooling

Primary author: TAYLOR, Rebecca (CERN) Presenter: TAYLOR, Rebecca (CERN) Session Classification: Poster $\rm IMCC$ and $\rm MuCol\ldots~$ / Report of Contributions

DESY Colloquium

Contribution ID: 8

Type: not specified

DESY Colloquium

Tuesday 13 May 2025 15:00 (1 hour)

Presenter: MALTONI, Fabio (Université catholique de Louvain)

Type: Poster

Design and optimization of a rapid cycling synchrotron chain for the muon collider on CERN site.

Tuesday 13 May 2025 19:10 (20 minutes)

The baseline design for the high-energy complex of a muon collider consists of a chain of Rapid Cycling Synchrotrons (RCS). The RCS chain examined in this study is based on CERN infrastructure: three RCSs are designed to reuse existing tunnels at CERN, the SPS and LHC tunnels. These synchrotrons cover an energy range from 63 GeV to 3.8 TeV and include both normal and hybrid types, featuring a combination of fixed-field superconducting magnets and pulsed normal-conducting magnets.

This poster presents the parameter optimization process and an initial optical design for this RCS chain. Additionally, it includes a preliminary comparison between the lattices of the SPS and LHC with that of the proposed RCSs.

What category does your poster fit in?

Acceleration

Primary author: SOUBIROU, Lisa (CEA Saclay)

Co-authors: CHANCE, Antoine (CEA Saclay); AMORIM, David (CERN); DAMERAU, Heiko (CERN); THIELE, Leonard (CERN)

Presenter: SOUBIROU, Lisa (CEA Saclay)

Type: Talk

Probing the Inert Doublet Model via Vector-Boson Fusion at a Muon Collider

In this talk, we explore the discovery potential of the Inert Doublet Model (IDM) via the vector boson fusion (VBF) channel at a muon collider with centre-of-mass energy of 10 TeV. The Inert Doublet Model is a two-Higgs-doublet model variant with an unbroken discrete \mathbb{Z}_2 symmetry, featuring new stable scalar particles that can serve as dark matter candidates. Current dark matter data constrain the phenomenologically viable parameter space of the IDM and render certain collider signatures elusive due to tiny couplings. However, VBF-type processes can still exhibit significant enhancements compared to the Standard Model, presenting a promising avenue to probe the IDM at a high-energy muon collider. We consider as our specific target process $\mu^+\mu^- \rightarrow \nu_{\mu}\bar{\nu}_{\mu}AA \rightarrow \nu_{\mu}\bar{\nu}_{\mu}jj\ell\ell HH$, where H and A are the lightest and second-lightest new scalars and ℓ can be electrons or muons. We perform both cut-based and machine-learning improved sensitivity analyses for such a signal, finding a population of promising benchmark scenarios. We additionally investigate the impact of the collider energy by comparing sensitivities to the target process at 3 TeV and 10 TeV. Our results provide a clear motivation for a muon collider design capable of reaching a 10 TeV centre-of-mass energy.

What category does your poster fit in?

Theory

Primary authors: BRAATHEN, Johannes (T (Phenomenology)); GABELMANN, Martin (T (Phenomenology)); STYLIANOU, Panagiotis (T (Phenomenology)); ROBENS, Tania (Rudjer Boskovic Institute (HR))

Presenter: STYLIANOU, Panagiotis (T (Phenomenology))

Type: Poster

Beam Loading Effects in RF Cavities for the Muon Cooling Complex

Tuesday 13 May 2025 19:10 (20 minutes)

The RF system for the initial and 6D-muon-cooling channels consists of several RF cavities operating at 352 and 704 MHz. To meet the luminosity requirements of a muon collider, the maximum muon beam intensity at the end of the cooling channel is expected to be on the order of 10^{12} muons per bunch. At such high beam intensities, transient beam loading can severely impact the accelerating gradient and degrade beam quality. Based on input from the beam dynamics design, we estimated the beam loading effects in the proposed RF cavities and analyzed mitigation strategies to ensure that the maximum allowable surface fields remain within safe limits, reducing the risk of RF breakdown.

What category does your poster fit in?

Muon Cooling

Primary author: Dr BARBAGALLO, Carmelo (CERN)
Co-author: Dr GRUDIEV, Alexej (CERN)
Presenter: Dr BARBAGALLO, Carmelo (CERN)
Session Classification: Poster

Type: Poster

Vertical-Excursion Fixed-Field Accelerators for Rapid Muon Acceleration

Tuesday 13 May 2025 19:10 (20 minutes)

A principal challenge associated with the realisation of the muon collider is the rapid acceleration of muons from injection to top energy within their lifetime. Rapid-cycling synchrotron (RCS) designs proposed thus far suffer limitations based on magnet ramp rates, power efficiency and power supply, and path length/time of flight differences (for the hybrid RCS proposals).

As an alternative, we outline acceleration schemes based on the Vertical-Excursion Fixed-Field Accelerator (vFFA) concept, wherein muons can be accelerated over equivalent energy ranges to RCS designs using exclusively time-independent superconducting magnets –whilst maintaining constant tunes and a zero path length difference. Stable vFFA lattices with comparable footprints to RCS1 and RCS4 are proposed, revealing the possibility for an energy-efficient machine without limits on acceleration rate imposed by magnet and power supply constraints. Moreover, the quasi-isochronous operation of the vFFA enables the possible use of on-crest acceleration, enabling a more efficient use of the available RF power and potentially eliminating the need to tune RF cavities over the acceleration cycle.

However, vFFAs suffer from complications associated with intrinsically coupled transverse optics. This poster additionally details methods whereby the coupled optics can be circumvented in straight sections to allow the construction of dispersion suppressors, as well as simplified injection and extraction systems. Ultimately, a vFFA ring with a number of 'decoupled straights' containing injection and extraction systems, as well as dispersion-suppressed high-gradient RF insertions, presents a viable and competitive alternative to RCS designs for muon acceleration – though further numerical simulation of transverse optics and longitudinal stability must now be conducted.

What category does your poster fit in?

Acceleration

Primary author: TOPP-MUGGLESTONE, Max (CERN)

Co-authors: CHANCE, Antoine (CEA Saclay); ROGERS, Chris; BERG, J Scott (Brookhaven National Laboratory); Dr LAGRANGE, Jean-Baptiste (STFC); MACHIDA, Shinji (STFC RAL)

Presenter: TOPP-MUGGLESTONE, Max (CERN)

Type: Poster

Towards a 3D Thermal-Electrodynamic Simulation of Non-Insulated ReBCO Coils

Tuesday 13 May 2025 19:10 (20 minutes)

Accurately modeling the transient behavior of non-insulated (NI) ReBCO superconducting coils is crucial for fully assessing their potential for high-field magnet applications. 3D Finite Element (FE) models are among the most promising approaches for capturing the thermal-electrodynamics of these coils. However, most popular mathematical formulations of Maxwell's equations for super-conductors, such as the well-known H- ϕ formulation, are currently too computationally expensive to simulate large-scale systems like accelerator magnets.

To address this challenge, we present a novel mathematical formulation that couples a 3D FE magnetic module with a 1D FE + 2D Finite Difference (FD) electric module, implemented in COMSOL Multiphysics. The formulation has been used to develop a model that simulates the electrodynamics of large ReBCO NI pancake coils. Although still under development, the model has been validated against other models across various test cases, and preliminary results demonstrate its ability to efficiently capture critical phenomena such as persistent current effects while significantly reducing the computational time required for large-scale 3D FE transient simulations.

The formulation has then been applied to simulate the energization of the Muon Collider 40 T Solenoid, offering valuable insights into: (1) the relationship between energization time and turn-to-turn contact resistance, and (2) the impact of magnetization on the Lorentz forces acting on the conductor. These results highlight the potential of this 3D magnetic and electric coupling approach to advance the understanding of NI superconducting coils.

The incorporation of thermal behaviour into this model is currently underway to investigate quench phenomena and evaluate advanced protection strategies.

What category does your poster fit in?

Software & Simulations

Primary author: RINALDONI, Davide (CERN / Politecnico di Milano (IT))

Co-author: Dr BORDINI, Bernardo (CERN)

Presenter: RINALDONI, Davide (CERN / Politecnico di Milano (IT))

Type: Poster

Performance of Particle Flow Reconstruction in the MAIA Detector at a 10 TeV Muon Collider

The MAIA (Muon Accelerator Instrumented Apparatus) detector is designed for optimal performance in the environment of the high beam-induced background (BIB) delivered by a $\sqrt{s} = 10$ TeV $\mu^+\mu^-$ collider. The performance of the MAIA detector has been evaluated in terms of tracking, photon, and neutron reconstruction efficiencies and resolutions with and without BIB. This work extends previous studies to now utilize both tracking and calorimeter information in conjunction to reconstruct charged pions using a particle flow algorithm. Performance of particle flow reconstruction is provided as charged pion reconstruction efficiency and energy resolution. This optimization of particle flow reconstruction serves as a foundation for future studies of more complicated detector signatures, such as from jets and hadronically decaying tau leptons.

What category does your poster fit in?

Experimental Physics

Primary author: PENN, Gregory (Yale University) Presenter: PENN, Gregory (Yale University)

Type: Poster

REBCO superconducting coating for high magnetic fields and high power RF resonating cavities

Tuesday 13 May 2025 19:10 (20 minutes)

Unlike their low temperature counterparts, high temperature superconductors (HTS) can retain excellent RF perfomance in the demanding conditions of some emerging high-energy physics technologies, which require high quality factors at frequencies in the GHz range under strong magnetic fields (16-20 T). In particular, we have demonstrated that REBa2Cu3O7-x (RE = Y, Gd, Eu) (REBCO) offers outstanding, better than-Cu RF response in such conditions [1,2]. If in addition, HTS materials would sustain very high accelerating gradients (100-150 MV/m) keeping low RF properties, they could represent a promising solution accelerating cavities like those of the cooling stage of the muon collider. Unfortunately, up to now the usage of REBCO in RF applications is hindered by its complicated material growth, which makes it virtually impossible for it to be grown directly on the geometrically complex surfaces required for many applications.

To achieve a low surface impedance REBCO coating in RF cavities, we have developed a coating methodology based on soldering and delaminating coated conductors (CC). Up to now, our coating methodology was employed for the fabrication of axion dark matter detection haloscopes [3,4], a superconductor pulse compressor and prototypes for the Future Circular Collider (FCC-hh) beam screen [5]. Our findings place REBCO CC-based coatings as a solid candidate to replace Cu as the low surface-impedance coating in many high-energy physics applications.

In this work, we have investigated the RF response of REBCO coatings up to 10 MV/cm at cryogenic temperatures and zero magnetic field and we are proceeding towards 100 MV/m experiments and later to superimpose a high magnetic field. All these experiments should generate data regarding the opportunities of HTS CC to replace Cu also in some cooling cavities of the Muon Collider feasibility study.

We acknwoledge the iFAST project, the RADES collaboration and the FCC feasibility study.

References:

[1] T. Puig et al 2019 Supercond. Sci. Technol. 32 094006, doi: 10.1088/1361-6668/ab2e66.

[2] A. Romanov et al. Sci Rep 10, 12325 (2020), doi: 10.1038/s41598-020-69004-z.

[3] J. Golm et al, IEEE TAS, vol. 32, no. 4, pp. 1-5, Art no. 1500605, doi: 10.1109/TASC.2022.3147741.

[4] S. Ahyoune et al, 2024. https://arxiv.org/abs/2403.07790

[5] G. T. Telles et al, 2023 Supercond. Sci. Technol. 36 045001, doi: 10.1088/1361-6668/ac97c9.

What category does your poster fit in?

Muon Cooling

Primary authors: THEOPHILO TELLES, Guilherme (Institut de Ciència de Materials de Barcelona (ICMAB - CSIC)); Mr BENEDETTI, Luca (Institut de Ciència de Materials de Barcelona (ICMAB - CSIC)); Mr AHMED, Irfan (Institut de Ciència de Materials de Barcelona (ICMAB - CSIC)); Mr LAMAS, Neil (Institut de Ciència de Materials de Barcelona (ICMAB - CSIC)); Dr GUTIERREZ, Joffre (Institut de Ciència de Materials de Barcelona (ICMAB - CSIC)); Prof. PUIG, Teresa (Institut de Ciència de Materials de Barcelona (ICMAB - CSIC));

Co-authors: GOLM, Jessica (CERN); Dr GRANADOS, Xavier (Institut de Ciència de Materials

de Barcelona (ICMAB - CSIC)); Dr ROMANOV, Artur (Institut de Ciència de Materials de Barcelona (ICMAB - CSIC)); WUENSCH, Walter (CERN); Dr DHAR, Ankur (SLAC National Accelerator Laboartory); NANNI, Emilio (SLAC National Accelerator Laboratory / Stanford University); Prof. HOLZAPFEL, Bernard (Karlsruher Institut für Technologie); CALATRONI, Sergio (CERN)

Presenter: THEOPHILO TELLES, Guilherme (Institut de Ciència de Materials de Barcelona (ICMAB - CSIC))

Type: Poster

Photon Reconstruction Performance for the 10 TeV MAIA Detector Concept

Tuesday 13 May 2025 19:10 (20 minutes)

The MAIA concept is a detector designed for a future Muon Collider operating at \sqrt{s} =10 TeV. The unique challenges of particle detection and reconstruction at a Muon Collider include mitigation of the beam-induced-background (BIB), requiring dedicated hardware and software solutions. Designing optimal detection and reconstruction software necessitates a detailed study of the effect of the BIB on various components of the detector, including the ECAL (electromagnetic calorimeter). A well-calibrated and well-resolved ECAL is especially crucial to reconstructing both electrons and photons, in addition to a broad range of final states with significant electromagnetic activity. This poster will detail the ability of the current MAIA detector software to reconstruct simulated photons, with a focus on efficiency and energy resolution. We will present results for simulated samples both with and without simulated BIB overlaid.

What category does your poster fit in?

Software & Simulations

Primary author: POWERS, Rose (Princeton University)Presenter: POWERS, Rose (Princeton University)Session Classification: Poster

Paula Desire Valdor: Intrabeam sc...

Contribution ID: 18

Type: Poster

Paula Desire Valdor: Intrabeam scattering effect on the final cooling of the Muon Collider

Tuesday 13 May 2025 19:10 (20 minutes)

Intrabeam scattering (IBS) has widely been studied in the field of accelerator physics. It impacts the entire performance of storage and damping rings, as it causes emittance growth. Its effect on one-pass linear accelerators was not expected to be as large. However, recent studies have suggested that IBS can become critical in these machines, as it highly enlarges their energy spread, especially for low energy and dense beams. This work presents its implementation and benchmark on the CERN developed tracking-code, RF-Track, and predicts its effect on the final cooling stage of the Future Muon Collider.

What category does your poster fit in?

Muon Cooling

Primary author: TAYLOR, Rebecca (CERN)Presenter: TAYLOR, Rebecca (CERN)Session Classification: Poster

Muon Collider Crash Course - http...

Contribution ID: 19

Type: not specified

Muon Collider Crash Course https://indico.desy.de/event/48594/

Monday 12 May 2025 09:00 (3h 40m)

https://indico.desy.de/event/48594/

Type: Poster

Mechanical design of a Be window for the RF cavities of the Muon Cooling Complex

Tuesday 13 May 2025 19:10 (20 minutes)

The Muon Cooling Complex is a key component of the future high-energy Muon Collider, utilizing ionization cooling to significantly reduce muon beam emittance. This process relies on RFaccelerating cavities operating within a multi-Tesla magnetic field, which necessitates the use of beryllium (Be) windows to ensure beam transmission while minimizing particle scattering.

Thermo-mechanical analyses indicate that the Be window is subject to significant temperature increases and mechanical stresses due to RF-induced heating and Lorentz forces. These effects lead to displacements that can cause frequency shifts beyond the cavity bandwidth, potentially compromising performance.

To address these challenges, the authors investigate the thermo-mechanical behaviour of the Be window to optimize its design. In particular, the impact of curvature and thickness variations is analysed to minimize temperature gradients, maintain structural integrity, and reduce deformations. By exploring different geometrical configurations, the study aims to enhance the mechanical stability of the window while preserving RF performance.

The results provide valuable insights for optimizing the design of Be windows in ionization cooling cavities, contributing to the overall feasibility and efficiency of the Muon Collider.

What category does your poster fit in?

Muon Cooling

Primary authors: GRUDIEV, Alexej (CERN); ACCETTURA, Carlotta (CERN); Dr BARBAGALLO, Carmelo (CERN); RODRIGUES BOFF, Isadora (CERN)

Presenter: ACCETTURA, Carlotta (CERN)

Type: Poster

Transient finite-element simulations of fast-ramping normal-conducting magnets for a 10TeV muon collider

Tuesday 13 May 2025 19:10 (20 minutes)

Ongoing conceptual studies for a 10TeV muon collider identified rapid cycling synchrotrons as major engineering challenge. Due to the muon's short lifetime of only 2.2µs at rest, normal-conducting bending magnets with field rise rates of well beyond 1kT/s are indispensable to support accordingly fast acceleration cycles. Energies of 100MJ will be interchanged between magnets and capacitor banks within few milliseconds. Accurate models of the magnets are thus required to optimize the overall system performance. The non-uniform temperature distribution in the magnet strongly affects material properties like the electrical conductivity of copper and must therefore be considered in the electromagnetic field problem. This contribution presents recent advancements in addressing this multi-physical problem by using problem-specific finite-element tools allowing to describe the inherently transient behavior. The ferromagnetic yoke is accurately resolved by using a novel combination of a Bergqvist hysteresis and a homogenized eddy current model. Finally, different magnet design concepts are compared in terms of material costs, magnetic energy, losses, field quality and temperature buildup.

What category does your poster fit in?

Acceleration

Primary author: Mr MOLL, Dominik (TU Darmstadt)

Co-authors: Mr BOATTINI, Fulvio (CERN); Dr DE GERSEM, Herbert (TU Darmstadt); Dr D'ANGELO, Laura (TU Darmstadt)

Presenter: Mr MOLL, Dominik (TU Darmstadt)

Type: Talk

Muophobic forces at the Muon Collider

We discuss how gauge forces not coupled at tree-level to muons can be investigated at a muon collider by studying scattering of muons into pairs of fermions that feel such force. We discuss how these scatterings are mediated by new physics couplings that can be seen alternatively as couplings of the muons that arise at loop-level or as four-fermion operators involving muons and the species of fermions coupled to the new gauge bosons.

We derive bounds on these "muophobic" gauge bosons and demonstrate that with the foreseen luminosity the muon collider, in spite of the coupling being originated only at loop level, can be sensitive to masses of the new gauge bosons up to several times the center of mass energy of the collider. These results show that muon collider reach for new physics extends well above the direct kinematical reach for on-shell production of new states, as the precision attained by the muon collider makes it sensitive to heavy new physics, with good sensitivity even when the new physics is not directly coupled to muons.

What category does your poster fit in?

Theory

Primary author: FRANCESCHINI, Roberto (CERN) **Presenter:** FRANCESCHINI, Roberto (CERN)

Type: Poster

Implementation and simulation of a rectilinear cooling channel in BDSIM

Tuesday 13 May 2025 19:10 (20 minutes)

Muon colliders offer high-luminosity, multi-TeV collisions without significant synchrotron radiation but require further exploration of muon production, acceleration, cooling, and storage techniques. A proposed 6D cooling demonstrator aims to extend the MICE experiment's validation of transverse ionization cooling to also reduce longitudinal emittance, using bunched muon beams and incorporating RF cavities for reacceleration. The cooling lattice includes solenoids for tight focusing, dipoles for beam dispersion, and wedge absorbers for differential energy loss. This paper presents a complete implementation of cooling channels for BDSIM, a Geant4-based accelerator simulation tool, using appropriate analytic field models to account for fringe-field-dominated magnets. Components have been tested individually and validated against other tracking codes such as G4BeamLine. A tracking study leveraging this implementation is presented, simulating and optimizing a rectilinear cooling channel for the 6D cooling demonstrator. The analysis incorporates beam parameters from existing proton drivers, using outputs from targetry and capture system designs.

What category does your poster fit in?

Muon Cooling

Primary author: KAMATH, Rohan
Co-authors: ROGERS, Chris; JURJ, Paul (Imperial College London)
Presenter: KAMATH, Rohan
Session Classification: Poster

Type: Poster

Magnetic and mechanical design of large-aperture HTS superconducting dipoles for the Muon Collider accelerator ring

Tuesday 13 May 2025 19:10 (20 minutes)

To push the boundaries of physics beyond the capabilities of the LHC and its High-Luminosity Upgrade (HL-LHC), particle physicists are exploring advanced accelerators to enable more precise measurements and achieve higher energies. Following the recommendation of the Updated European Strategy for Particle Physics (ESPP), the International Muon Collider Collaboration has been established to assess the feasibility of a muon collider facility with a center-of-mass energy of 10 TeV. This initiative faces significant technical challenges, primarily due to the short muon lifetime at rest of just 2.2 μ s. Overcoming this constraint requires the development of cutting-edge technologies, including complex magnets, RF systems, targets, shielding, and cooling techniques. This work focuses on optimizing the electromagnetic and mechanical design of high-temperature superconducting (HTS) dipoles with a large rectangular aperture for the accelerator ring, capable of generating a bore field of 10 T, using finite element methods. Key objectives include achieving precise magnetic field uniformity, conducting an initial assessment of the mechanical behavior of the HTS coils and a preliminary study of hysteretic losses. This research aligns with the ESPP's emphasis on technological advancements, particularly in high-field superconducting magnets, which are essential components for future circular colliders.

What category does your poster fit in?

Acceleration

Primary author: PAMPALONI, Alessandra (INFN Genova)

Co-authors: Dr BERSANI, Andrea (INFN Genova); Mr GAGNO, Andrea (INFN Genova); Dr CAIFFI, Barbara (INFN Genova); Dr SANTINI, Carlo (INFN LASA); Mr NOVELLI, Daniel (INFN Genova); Dr LEVI, Filippo (INFN Genova); Mr MARIANI, Francesco (INFN LASA); Mr BALCONI, Lorenzo (INFN LASA); Mr ALFONSO, Luca (INFN Genova); Dr BOTTURA, Luca (CERN); Dr STATERA, Marco (INFN LASA); Dr MARIOTTO, Samuele (INFN LASA); Dr FABBRI, Siara Sandra (CERN); Dr FARINON, Stefania (INFN Genova); Dr SORTI, Stefano (INFN LASA); Mr MAIELLO, Tommaso (INFN Genova)

Presenter: PAMPALONI, Alessandra (INFN Genova)

Type: Poster

Combined-Function magnets for a Muon Collider

Tuesday 13 May 2025 19:10 (20 minutes)

In the scenario of the Muon Collider, the short muon lifetime (2.2 μ s at rest) poses several challenges in developing magnets, RF systems, targets, shielding, and cooling. One major concern is the flux of neutrinos produced by muon decay in the collider, which necessitates minimizing straight sections. This constraint makes conventional FoDo cells unsuitable, requiring the development of combined-function magnets that integrate bending with focusing/defocusing or chromaticity correction functions.

To address these challenges, magnets capable of combining a dipole field with either a quadrupole field (B1+B2) or a sextupole field (B1+B3) are currently under study. This work extends the Aperture-Field (A-B) plot methodology, previously applied to single dipoles or quadrupoles, to dipole-quadrupole combined-function magnets. It outlines feasible designs based on aperture, field strength, mechanical stress, quench protection, and cost. Using a Python-ANSYS tool, optimized configurations were simulated under the sector coil approximation, focusing on ReBCO coils operating at 4.5K, 10K, and 20K. The resulting Dipole Field –Quadrupole Gradient (B-G) plots illustrate the design space, highlighting the technological limits and feasibility of various dipole and quadrupole combinations.

What category does your poster fit in?

Collider

Primary author: NOVELLI, Daniel (INFN Genoa and Sapienza University of Rome)

Co-authors: PAMPALONI, Alessandra (INFN Genova); BERSANI, Andrea (INFN Genova); CAIFFI, Barbara (INFN Genova); MARIANI, Francesco (INFN LASA); ALFONSO, Luca (INFN Genova); BOT-TURA, Luca (CERN); MARIOTTO, Samuele (INFN LASA); FARINON, Stefania (INFN Genova); SALMI, Tiina (Tampere University)

Presenter: NOVELLI, Daniel (INFN Genoa and Sapienza University of Rome)

Type: Poster

End-to-end optimization of a Muon Collider calorimeter

Tuesday 13 May 2025 19:10 (20 minutes)

Setup design is a critical aspect of experiment development, particularly in high-energy physics, where decisions influence research trajectories for decades. Within the MODE Collaboration, we aim to generalize Machine Learning methodologies to construct a fully differentiable pipeline for optimizing the geometry of the Muon Collider Electromagnetic Calorimeter.

Our approach leverages Denoising Diffusion Probabilistic Models (DDPMs) for signal generation and Graph Neural Networks (GNNs) for photon reconstruction in the presence of Beam-Induced Background from muon decays. Through automatic differentiation, we integrate these components into a unified framework that enables end-to-end optimization of calorimeter configurations. We present the structure of this pipeline, discuss key generation and reconstruction techniques, and showcase the latest results on proposed geometries.

What category does your poster fit in?

Detector

Primary author: NARDI, Federico (Università di Padova - LPCA Clermont)
Presenter: NARDI, Federico (Università di Padova - LPCA Clermont)
Session Classification: Poster

Type: Poster

First Considerations on the Electromagnetic and Mechanical Design of a Block-Coil Dipole for the Muon Collider Ring

Tuesday 13 May 2025 19:10 (20 minutes)

Following the guidelines of the European Strategy for Particle Physics, the International Muon Collider Collaboration (IMCC) has outlined a plan for an innovative particle accelerator that exceeds the performance of the LHC and its luminosity upgrade, aiming to explore new frontiers in particle physics. This next-generation machine is a muon accelerator featuring a 10-km-long collider ring capable of reaching a center-of-mass energy of 10 TeV. The short average lifetime of muons (only 2.2 μ s at rest), their challenging production and cooling processes, and the radiation issues caused by muon decay require the development of advanced and compact superconducting magnets that can generate extremely high magnetic fields within large apertures. To address these challenges, ReBCO has been identified as the most suitable superconducting material due to its outstanding critical current.

This contribution presents a preliminary 2D study of dipoles for the collider ring arc, utilizing a block-coil configuration with a novel cable stacked orientation and an innovative end winding design. The updated electromagnetic design achieves 16 T bore field within 140 mm diameter aperture, accompanied by an analytical estimation of the hysteretic losses, accounting for the transport current effects. Finally, an initial mechanical analysis of the magnet is presented using the Finite Element Method (FEM), exploring the application of a stress-management strategy to mitigate the effects of the high Lorentz forces.

What category does your poster fit in?

Collider

Primary author: ALFONSO, Luca (INFN - Genova)

Co-authors: PAMPALONI, Alessandra (INFN Genova); BERSANI, Andrea (INFN Genova); CAIFFI, Barbara (INFN Genova); NOVELLI, Daniel (INFN Genoa and Sapienza University of Rome); MARIANI, Francesco (INFN LASA); BOTTURA, Luca (CERN); MARIOTTO, Samuele (INFN LASA); FARINON, Stefania (INFN Genova); SALMI, Tiina (Tampere University)

Presenter: ALFONSO, Luca (INFN - Genova)

Type: Poster

Electromagnetic and mechanical design of 16T Cos-Theta dipole for the collider ring of Muon Collider

Tuesday 13 May 2025 19:10 (20 minutes)

Following the indications of the European Strategy for Particle Physics update (ESPP), the International Muon Collider Collaboration has been established to explore the viability of a muon collider with a center-of-mass energy of 10 TeV. This attempt presents significant technological developments to fast accelerate and efficiently collide muon beams before they decay if we consider the extremely short muon lifetime of just 2.2 microseconds at rest.

To reduce machine costs and enhance collider luminosity, the superconducting main arc dipole magnets of the collider ring must be both compact and capable of producing a strong, static high magnetic field. Additionally, the coil geometry needs to have wide aperture to accommodate tungsten shield structure that protects the superconducting coil volume from exposure to radiation and heat deposition generated by muon decays. Presently, high temperature superconductors represent the baseline magnets configuration for the 10 TeV collider due to the high performances and high operating temperature requirements considered. To optimize the electromagnetic field quality of the high field dipoles, magnetization of the HTS tape must be considered in the analysis due to the wide tape width.

This work presents the electromagnetic and mechanical design of a cos-theta dipole for the collider ring. In addition, the study focuses on the comparison of fem simulation model performed in COMSOL and analytical model of the magnetization effect of the persistent currents on field quality and hysteretic losses considering also the influence of transport current in the coil conductor.

What category does your poster fit in?

Collider

Primary author: Mr MARIANI, Francesco (INFN Milano and Sapienza University of Rome)

Co-authors: PAMPALONI, Alessandra (INFN Genova); BERSANI, Andrea (INFN Genova); CAIFFI, Barbara (INFN Genova); NOVELLI, Daniel (INFN Genoa and Sapienza University of Rome); ALFONSO, Luca (INFN Genova); BOTTURA, Luca (CERN); ROSSI, Lucio (INFN-LASA-Milano); MARIOTTO, Samuele (INFN LASA); FARINON, Stefania (INFN Genova); SORTI, Stefano (INFN LASA); SALMI, Tiina (Tampere University)

Presenter: Mr MARIANI, Francesco (INFN Milano and Sapienza University of Rome)

Type: Poster

Hadronic Calorimeter Performance with BIB for the MAIA Detector Concept

Tuesday 13 May 2025 19:10 (20 minutes)

A 10 TeV muon collider offers a combination of unprecedented energy collisions in a clean leptonic environment, providing both precision measurements and the highest energy reach. This endeavor will require novel detector technologies, designs, and software. Previous studies have analyzed 1.5 and 3 TeV muon collider detector designs adapted from CERN's Compact Linear Collider (CLIC) detector with performances comparable to the LHC experiment. The MAIA detector concept is specifically optimized for 10 TeV to provide precision physics at this energy scale while suppressing the increased beam-induced-background (BIB) from muon decays at 10 TeV. The detector consists of an all-silicon tracker immersed in a 5T solenoidal field. High-granularity silicontungsten and iron-scintillator calorimetry is optimized to contain high-energy showers and allow for particle-flow reconstruction. To discriminate the BIB from physics signals, MAIA's calorimeters must provide good timing information, fine spatial granularity, and high energy resolution. The MAIA collaboration calibrated and tested MAIA's Hadronic Calorimeter (HCAL) performance through Anti-kT jet reconstruction efficiency and energy resolution.

What category does your poster fit in?

Detector

Primary author: SLEDGE, Elise (California Institute of Technology)Presenter: SLEDGE, Elise (California Institute of Technology)Session Classification: Poster

Type: Poster

Reconstructing Tau Leptons in a 10 TeV Muon Collider

Tuesday 13 May 2025 19:10 (20 minutes)

The tau lepton plays a crucial role in studying the Standard Model, providing access to the Higgs and leptonic sectors of physics. Unlike other proposed future collider experiments, a muon collider has the potential to reach high center of mass energies with colliding leptons, which are fundamental particles, ensuring that the totality of the beam energy is available for the production of new particles, such as taus. However, the inherent instability of muons poses significant challenges in detector design and particle reconstruction for this machine. Muon decays generate substantial beam-induced background (BIB), dominated by soft secondary particles which can obscure collision products in the detector volume. Regardless of the environment, tau reconstruction is already challenging to perform due to the fact that the taus decay before reaching the detector region and must be reconstructed through their decay products, approximately 65% of which are hadronic. Tau reconstruction has been investigated for a 3 TeV muon collider, but no dedicated study exists for a 10 TeV machine. In this study, we assess the performance of the TauFinder reconstruction algorithm in the MAIA (Muon Accelerator Instrumented Apparatus) detector geometry, intended for $\sqrt{s} = 10$ TeV $\mu^+\mu^-$ collisions. We evaluate the reconstruction efficiency of one-prong and three-prong hadronically decaying taus. Our results provide a benchmark performance of tau reconstruction in a 10 TeV muon collider, demonstrating the physics potential of this machine.

What category does your poster fit in?

Software & Simulations

Primary author: MARTINEZ, Ethan Presenter: MARTINEZ, Ethan Session Classification: Poster

DESY Tours

Contribution ID: 31

Type: not specified

DESY Tours

Friday 16 May 2025 14:00 (2 hours)

IMCC and MuCol ... / Report of Contributions

Overview of MuCol Study Proton ...

Contribution ID: 32

Type: not specified

Overview of MuCol Study Proton Driver

Tuesday 13 May 2025 08:30 (20 minutes)

What category does your poster fit in?

Presenter: JOHANNESSON, Sophia

IMCC and MuCol ... / Report of Contributions

Alternative design proton complex

Contribution ID: 33

Type: not specified

Alternative design proton complex

Tuesday 13 May 2025 08:50 (20 minutes)

Presenter: MACHIDA, Shinji (STFC RAL)

Proton Ring Acceleration

Contribution ID: 34

Type: not specified

Proton Ring Acceleration

Tuesday 13 May 2025 09:10 (20 minutes)

Presenter: ELDRED, Jeff

IMCC and MuCol ... / Report of Contributions

Bunch rotation experiments and b ...

Contribution ID: 35

Type: Talk

Bunch rotation experiments and benchmarking

Tuesday 13 May 2025 09:30 (20 minutes)

What category does your poster fit in?

Presenter: HOOVER, Austin

 $\rm IMCC$ and $\rm MuCol\ldots~$ / Report of Contributions

Bunch Merging

Contribution ID: 36

Type: not specified

Bunch Merging

Tuesday 13 May 2025 09:50 (20 minutes)

Presenter: YUAN, R

IMCC and MuCol ... / Report of Contributions

Baseline configurations, options, p ...

Contribution ID: 37

Type: not specified

Baseline configurations, options, power and cost

Thursday 15 May 2025 14:00 (25 minutes)

What category does your poster fit in?

Presenter: ROSSI, Carlo

Session Classification: Accelerator technology parallel
Powering concepts for SC and NC ...

Contribution ID: 38

Type: not specified

Powering concepts for SC and NC magnets

Thursday 15 May 2025 14:25 (25 minutes)

What category does your poster fit in?

Presenters: FAZIOLI, Davide; BOATTINI, Fulvio

Protection concepts for SC magnets

Contribution ID: 39

Type: not specified

Protection concepts for SC magnets

Thursday 15 May 2025 14:50 (25 minutes)

What category does your poster fit in?

Presenter: MULDERS, Tim

Cryogenic concepts for SC magnets

Contribution ID: 40

Type: not specified

Cryogenic concepts for SC magnets

Thursday 15 May 2025 15:15 (25 minutes)

Status of optics design

Contribution ID: 41

Type: not specified

Status of optics design

Tuesday 13 May 2025 10:45 (25 minutes)

Presenter: SOUBIROU, Lisa (CEA Saclay)

Update on RLA studies

Contribution ID: 42

Type: not specified

Update on RLA studies

Tuesday 13 May 2025 11:10 (20 minutes)

What category does your poster fit in?

Presenter: AKSOY, Avni

NC magnet configuration (dipoles ...

Contribution ID: 43

Type: not specified

NC magnet configuration (dipoles and quadrupoles)

Tuesday 13 May 2025 11:30 (20 minutes)

What category does your poster fit in?

Presenters: BRESCHI, Marco; VIAROUGE, Philippe **Session Classification:** Accelerator parallel

Dynamic analysis of NC magnets

Contribution ID: 44

Type: not specified

Dynamic analysis of NC magnets

Tuesday 13 May 2025 11:50 (20 minutes)

What category does your poster fit in?

Presenters: MOLL, Dominik; VIAROUGE, Philippe **Session Classification:** Accelerator parallel

 $\rm IMCC$ and $\rm MuCol\ldots$ / Report of Contributions

SC Magnet Designs

Contribution ID: 45

Type: not specified

SC Magnet Designs

Tuesday 13 May 2025 12:10 (20 minutes)

Input considerations to heat limits & warm-to-cold transitions

Presenter: FABBRI, Siara Sandra (CERN)

Fluidized W target: Challanges an ...

Contribution ID: 46

Type: not specified

Fluidized W target: Challanges and considerations

Tuesday 13 May 2025 10:45 (20 minutes)

What category does your poster fit in?

Presenters: SUITTERS, Ben (STFC RAL); WILCOX, Dan

System design and shock wave ph ...

Contribution ID: 47

Type: not specified

System design and shock wave phenomena in a liquid Pb target

Tuesday 13 May 2025 11:05 (20 minutes)

What category does your poster fit in?

Presenters: CARRELLI, Carlo; TRICARICO, Luca (Department of Industrial Engineering, Lab. of Montecuccolino, University of Bologna, Via dei Colli 16, 40136 Bologna, Italy - ENEA - CENTRO RICERCHE BRASIMONE, Località Brasimone 40032 Camugnano (Bologna).)

Solenoid interaction with a liquid ...

Contribution ID: 48

Type: not specified

Solenoid interaction with a liquid Pb target

Tuesday 13 May 2025 11:25 (15 minutes)

What category does your poster fit in?

Presenter: CANDIDO, Silvio

Graphite Target: from 2 to 4 MW

Contribution ID: 49

Type: not specified

Graphite Target: from 2 to 4 MW

Tuesday 13 May 2025 11:40 (15 minutes)

What category does your poster fit in?

Presenter: CANDIDO, Silvio

Integration & magnets configurati ...

Contribution ID: 50

Type: not specified

Integration & magnets configuration in the fronthand of the Muon Collider

Tuesday 13 May 2025 11:55 (15 minutes)

What category does your poster fit in?

Presenters: PORTONE, Alfredo; KOLEHMAINEN, Antti

Overview talk - target & capture

Contribution ID: 51

Type: not specified

Overview talk - target & capture

Tuesday 13 May 2025 16:30 (20 minutes)

Presenter: ROGERS, Chris

Pion yield of target & radiation via ...

Contribution ID: 52

Type: not specified

Pion yield of target & radiation via FLUKA simulations

Tuesday 13 May 2025 16:50 (20 minutes)

Presenter: MANCZAK, Jerzy Mikolaj (CERN) **Session Classification:** Accelerator parallel

Pion yield from Tungsten target

Contribution ID: 53

Type: not specified

Pion yield from Tungsten target

Tuesday 13 May 2025 17:10 (20 minutes)

What category does your poster fit in?

Presenter: BISHOP, Will

Front-end, longitudinal capture

Contribution ID: 54

Type: not specified

Front-end, longitudinal capture

Tuesday 13 May 2025 17:30 (20 minutes)

Presenter:BERG, J Scott (Brookhaven National Laboratory)Session Classification:Accelerator parallel

Magnets for the muon collider tar ...

Contribution ID: 55

Type: not specified

Magnets for the muon collider target and chicane

Tuesday 13 May 2025 17:50 (20 minutes)

Presenter: PORTONE, Alfredo

Longitudinal beam dynamics

Contribution ID: 56

Type: not specified

Longitudinal beam dynamics

Tuesday 13 May 2025 16:30 (25 minutes)

What category does your poster fit in?

Presenter: LAMB, Elleanor

Update on collective effects in RCS

Contribution ID: 57

Type: not specified

Update on collective effects in RCS

Tuesday 13 May 2025 16:55 (25 minutes)

Presenter: AMORIM, David (CERN)

RCS design at Fermilab

Contribution ID: 58

Type: not specified

RCS design at Fermilab

Tuesday 13 May 2025 17:20 (25 minutes)

Presenter: CAPOBIANCO-HOGAN, Kyle (Stony Brook University) **Session Classification:** Accelerator parallel

Update on vFFA alternative

Contribution ID: 59

Type: not specified

Update on vFFA alternative

Tuesday 13 May 2025 17:45 (25 minutes)

Presenter: TOPP-MUGGLESTONE, Max (CERN) **Session Classification:** Accelerator parallel $IMCC \ and \ MuCol \ldots \ / \ Report \ of \ Contributions$

Magnet test facilities

Contribution ID: 60

Type: not specified

Magnet test facilities

Wednesday 14 May 2025 16:15 (20 minutes)

Presenter: STATERA, Marco (INFN - LASA)

Update on RF test facilities

Contribution ID: 61

Type: not specified

Update on RF test facilities

Wednesday 14 May 2025 16:35 (20 minutes)

 Presenter:
 NANNI, Emilio (SLAC National Accelerator Laboratory / Stanford University)

 Session Classification:
 Accelerator parallel

Updates on demonstrator siting at ...

Contribution ID: 62

Type: not specified

Updates on demonstrator siting at CERN

Wednesday 14 May 2025 16:55 (20 minutes)

What category does your poster fit in?

Presenter: FERNANDEZ RONCAL, Javier

Demonstrator Front End Design U...

Contribution ID: 63

Type: not specified

Demonstrator Front End Design Update

Wednesday 14 May 2025 17:15 (20 minutes)

Presenter: JURJ, Paul (Imperial College London) **Session Classification:** Accelerator parallel

Updates on demonstrator siting at ...

Contribution ID: 64

Type: not specified

Updates on demonstrator siting at Fermilab

Wednesday 14 May 2025 17:35 (20 minutes)

Presenter: STRATAKIS, Diktys

Overall integration of Cooling Cell: ...

Contribution ID: 65

Type: not specified

Overall integration of Cooling Cell: status and plan

Wednesday 14 May 2025 14:00 (20 minutes)

Presenter: ROSSI, Lucio (INFN-LASA-Milano)

Magnet Design for the 1st demo ce ...

Contribution ID: 66

Type: not specified

Magnet Design for the 1st demo cell of the 6D cooling (S5-like cell)

Wednesday 14 May 2025 14:20 (20 minutes)

What category does your poster fit in?

Presenter: SCARANTINO, Giuseppe

RF cavity design for cooling cell d ...

Contribution ID: 67

Type: not specified

RF cavity design for cooling cell demonstrator

Wednesday 14 May 2025 14:40 (20 minutes)

What category does your poster fit in?

Presenter: GIOVE, Dario

Beam performance in the cooling cell

Contribution ID: 68

Type: not specified

Beam performance in the cooling cell

Wednesday 14 May 2025 15:00 (20 minutes)

Presenter:JURJ, Paul (Imperial College London)Session Classification:Accelerator technology parallel

Update on Optics Design

Contribution ID: 69

Type: not specified

Update on Optics Design

Thursday 15 May 2025 08:30 (35 minutes)

Presenter: VANWELDE, Marion

Update on Impedances and Instabi...

Contribution ID: 70

Type: not specified

Update on Impedances and Instabilities

Thursday 15 May 2025 09:05 (15 minutes)

Presenter: AMORIM, David (CERN)

 $IMCC \ and \ MuCol \ldots \ / \ Report \ of \ Contributions$

Magnet use in lattice

Contribution ID: 71

Type: not specified

Magnet use in lattice

Thursday 15 May 2025 09:20 (20 minutes)

What category does your poster fit in?

Presenter: VANWELDE, Marion

Overview of single and combined...

Contribution ID: 72

Type: not specified

Overview of single and combined function magnet limitations

Thursday 15 May 2025 09:40 (15 minutes)

Presenter: NOVELLI, Daniel (INFN Genoa and Sapienza University of Rome) **Session Classification:** Accelerator parallel

Dipole magnet designs for the coll...

Contribution ID: 73

Type: not specified

Dipole magnet designs for the collider

Thursday 15 May 2025 09:55 (15 minutes)

Presenter: MARIOTTO, Samuele (INFN LASA) **Session Classification:** Accelerator parallel
Rectilinear beam physics

Contribution ID: 74

Type: not specified

Rectilinear beam physics

Thursday 15 May 2025 08:30 (20 minutes)

Presenter: ZHU, Ruihu

Beam Loading in RF Cavities for t ...

Contribution ID: 75

Type: not specified

Beam Loading in RF Cavities for the Rectilinear Muon Cooling Channel

Thursday 15 May 2025 08:50 (20 minutes)

Presenter: Dr BARBAGALLO, Carmelo (CERN) **Session Classification:** Accelerator parallel

Rectilinear cooling magnets

Contribution ID: 76

Type: not specified

Rectilinear cooling magnets

Thursday 15 May 2025 09:10 (20 minutes)

Presenter: FABBRI, Siara Sandra (CERN)

Initial 6D Muon Cooling in a Char...

Contribution ID: 77

Type: not specified

Initial 6D Muon Cooling in a Charge Agnostic Design

Thursday 15 May 2025 09:30 (20 minutes)

What category does your poster fit in?

Presenter: RIGGALL, Caroline

Transverse Impedance in Matter

Contribution ID: 78

Type: not specified

Transverse Impedance in Matter

Thursday 15 May 2025 09:50 (20 minutes)

What category does your poster fit in?

Presenter: METRAL, Elias

Final cooling beam physics

Contribution ID: 79

Type: not specified

Final cooling beam physics

Thursday 15 May 2025 10:45 (20 minutes)

What category does your poster fit in?

Presenter: STECHAUNER, Bernd

Absorbers and Windows for 6D an ...

Contribution ID: 80

Type: not specified

Absorbers and Windows for 6D and Final Cooling

Thursday 15 May 2025 11:05 (20 minutes)

What category does your poster fit in?

Presenters: FERREIRA SOMOZA, Jose Antonio; GIOVINCO, Valentina **Session Classification:** Accelerator parallel

Final cooling magnets

Contribution ID: 81

Type: not specified

Final cooling magnets

Thursday 15 May 2025 11:25 (20 minutes)

Presenter: BORDINI, Bernardo (CERN)

Final cooling lattice design

Contribution ID: 82

Type: not specified

Final cooling lattice design

Thursday 15 May 2025 11:45 (20 minutes)

Presenter: TAYLOR, Rebecca (CERN)

Lattice with Longer 6D option

Contribution ID: 83

Type: not specified

Lattice with Longer 6D option

Thursday 15 May 2025 12:05 (20 minutes)

What category does your poster fit in?

Presenter: ZHU, Ruihu

Neutrino Radiation Studies for Ge ...

Contribution ID: 84

Type: not specified

Neutrino Radiation Studies for General and Site-based designs

Thursday 15 May 2025 11:40 (20 minutes)

Presenter: MANCZAK, Jerzy Mikolaj (CERN) **Session Classification:** Accelerator parallel

Plans for the mover system

Contribution ID: 85

Type: not specified

Plans for the mover system

Thursday 15 May 2025 12:00 (15 minutes)

Presenters: KOLEHMAINEN, Antti; ACCETTURA, Carlotta **Session Classification:** Accelerator parallel

 $IMCC \ and \ MuCol \ldots \ / \ Report \ of \ Contributions$

Geoprofiler tool

Contribution ID: 86

Type: not specified

Geoprofiler tool

Thursday 15 May 2025 12:15 (15 minutes)

What category does your poster fit in?

Presenter: DESPONDS, Charlotte

SRF system for MC accelerators

Contribution ID: 87

Type: not specified

SRF system for MC accelerators

Thursday 15 May 2025 14:00 (20 minutes)

Presenter: THIELE, Leonard (CERN)

RF tuners for SRF cavities

Contribution ID: 88

Type: not specified

RF tuners for SRF cavities

Thursday 15 May 2025 14:20 (20 minutes)

Presenter: PAPARELLA, Rocco

US talk on RF for MC

Contribution ID: 89

Type: not specified

US talk on RF for MC

Thursday 15 May 2025 14:40 (20 minutes)

Presenter: LUO, Tianhuan (Lawrence Berkeley National Laboratory) **Session Classification:** Accelerator technology parallel

RF power sources for MC

Contribution ID: 90

Type: not specified

RF power sources for **MC**

Thursday 15 May 2025 15:00 (20 minutes)

What category does your poster fit in?

Presenter: SPELLING, Alex

 $IMCC \ and \ MuCol \ldots \ / \ Report \ of \ Contributions$

RF breakdown studies

Contribution ID: 91

Type: not specified

RF breakdown studies

Thursday 15 May 2025 15:20 (20 minutes)

What category does your poster fit in?

Presenter: PLOUIN, Juliette

R&D plan, presentation, missing d...

Contribution ID: 92

Type: not specified

R&D plan, presentation, missing developments, priorities

Tuesday 13 May 2025 08:30 (20 minutes)

Presenter: BOTTURA, Luca (CERN)

Cost model - SC solenoids

Contribution ID: 93

Type: not specified

Cost model - SC solenoids

Tuesday 13 May 2025 08:50 (20 minutes)

Presenter: STATERA, Marco (INFN - LASA)

Cost model - SC accelerator magnets

Contribution ID: 94

Type: not specified

Cost model - SC accelerator magnets

Tuesday 13 May 2025 09:10 (20 minutes)

What category does your poster fit in?

Presenters: CAIFFI, Barbara (INFN Genova); MARIOTTO, Samuele (INFN LASA) **Session Classification:** Accelerator technology parallel

Cost Model - NC accelerator magn...

Contribution ID: 95

Type: not specified

Cost Model - NC accelerator magnets and poewr converters

Tuesday 13 May 2025 09:30 (20 minutes)

What category does your poster fit in?

Presenter: BOATTINI, Fulvio

MUSIC Status and Plans

Contribution ID: 96

Type: not specified

MUSIC Status and Plans

Wednesday 14 May 2025 14:00 (20 minutes)

Presenter: Dr SESTINI, Lorenzo (INFN-Padova)

Session Classification: Physics and Detector parallel

MAIA Status and Plans

Contribution ID: 97

Type: not specified

MAIA Status and Plans

Wednesday 14 May 2025 14:20 (20 minutes)

Presenter: KENNEDY, Kiley (Princeton University (US)) **Session Classification:** Physics and Detector parallel

Considerations for the Frontend in ...

Contribution ID: 98

Type: not specified

Considerations for the Frontend intelligence

Wednesday 14 May 2025 14:40 (20 minutes)

Presenter: PAGAN GRISO, Simone (Lawrence Berkeley National Lab. (US)) **Session Classification:** Physics and Detector parallel

Considerations for Luminosity Me...

Contribution ID: 99

Type: not specified

Considerations for Luminosity Measurements

Wednesday 14 May 2025 15:00 (20 minutes)

What category does your poster fit in?

Presenter: PALMER, Chris (University of Marylan)

Session Classification: Physics and Detector parallel

Timing Detector in construction at ...

Contribution ID: 100

Type: not specified

Timing Detector in construction at CMS and ATLAS for the HL-LHC - riad to a 4D tracker

Wednesday 14 May 2025 15:20 (20 minutes)

What category does your poster fit in?

Presenter: FERRERO, Marco (INFN Torino)

Session Classification: Physics and Detector parallel

Crystal Based Calorimetry Overview

Contribution ID: 101

Type: not specified

Crystal Based Calorimetry Overview

Thursday 15 May 2025 08:30 (20 minutes)

What category does your poster fit in?

Presenter: LUCCHINI, Marco Toliman (Università & INFN, Milano-Bicocca (IT)) **Session Classification:** Physics and Detector parallel $IMCC \ and \ MuCol \ldots \ / \ Report \ of \ Contributions$

Quantum Detectors

Contribution ID: 102

Type: not specified

Quantum Detectors

Thursday 15 May 2025 08:50 (20 minutes)

What category does your poster fit in?

Presenter: WANG, Christina (Fermilab)

Session Classification: Physics and Detector parallel

MPGD HCal Developments

Contribution ID: 103

Type: not specified

MPGD HCal Developments

Thursday 15 May 2025 09:10 (20 minutes)

What category does your poster fit in?

Presenter: LONGO, Luigi (INFN Bari)

Session Classification: Physics and Detector parallel

BIB Suppression Studies

Contribution ID: 104

Type: not specified

BIB Suppression Studies

Thursday 15 May 2025 09:30 (15 minutes)

Presenter: RASTOGI, Angira (Lawrence Berkeley National Laboratory (US)) **Session Classification:** Physics and Detector parallel $IMCC \ and \ MuCol \ldots \ / \ Report \ of \ Contributions$

Crilin Update

Contribution ID: 105

Type: not specified

Crilin Update

Thursday 15 May 2025 09:45 (15 minutes)

What category does your poster fit in?

Presenter: PALOMBINI, Leonardo (INFN Padova)

Session Classification: Physics and Detector parallel

From ETROC to future timing ASICs

Contribution ID: 106

Type: not specified

From ETROC to future timing ASICs

Thursday 15 May 2025 10:00 (15 minutes)

What category does your poster fit in?

Presenter: SAFDARI, Murtaza (Fermilab)

Session Classification: Physics and Detector parallel

High Acceptance Thermalisation o ...

Contribution ID: 107

Type: Poster

High Acceptance Thermalisation of Positive Muons

Tuesday 13 May 2025 19:10 (20 minutes)

Low energy cooling of positive muons has been demonstrated using a modified Wien filter to deliver frictional cooling or by laser ionisation cooling. These techniques have been shown experimentally to deliver extremely cold - thermal - muon beams, but studies continue to demonstrate efficiency and acceptance suitable for a muon collider. An equivalent system for negative muons has not been demonstrated owing to the formation of strongly bound muonic atoms at relatively high energy.

In this poster, we propose a novel low energy cooling technique for positive muons. Our studies have shown delivery of cold muon beams with acceptance and efficiency that is comparable to the rectilinear "B-stage" cooling system in just a few metres of beamline and with modest hardware requirements. Such a device could yield improvement in the muon collider facility performance while reducing costs significantly. It would also be promising as a source for low energy positive muons for applications such as muSR.

What category does your poster fit in?

Muon Cooling

Primary author: ROGERS, Chris

Co-authors: HILLIER, Adrian; LETCHFORD, Alan; BAKER, Peter; STEWART, Rhea

Presenter: ROGERS, Chris

Session Classification: Poster

Introduction and timeline

Contribution ID: 108

Type: not specified

Introduction and timeline

Wednesday 14 May 2025 08:30 (10 minutes)

Presenter: SCHULTE, Daniel (CERN) **Session Classification:** Plenary $IMCC \ and \ MuCol \ldots \ / \ Report \ of \ Contributions$

Civil Engineering

Contribution ID: 109

Type: not specified

Civil Engineering

Wednesday 14 May 2025 08:40 (10 minutes)

Presenter: MACTAVISH, Edward (CERN)

Session Classification: Plenary
$\rm IMCC$ and $\rm MuCol\ldots~$ / Report of Contributions

Neutrino

Contribution ID: 110

Type: not specified

Neutrino

Wednesday 14 May 2025 08:55 (10 minutes)

Presenter: AHDIDA, Claudia **Session Classification:** Plenary

Cost and Power

Contribution ID: 111

Type: not specified

Cost and Power

Wednesday 14 May 2025 09:10 (10 minutes)

Presenter: ROSSI, Carlo

 $\rm IMCC$ and $\rm MuCol\dots$ / Report of Contributions

Magnets

Contribution ID: 112

Type: not specified

Magnets

Wednesday 14 May 2025 09:25 (20 minutes)

Presenter: BOTTURA, Luca (CERN) **Session Classification:** Plenary

Demonstrator and cooling cell

Contribution ID: 113

Type: not specified

Demonstrator and cooling cell

Wednesday 14 May 2025 09:55 (25 minutes)

Presenter: ROSSI, Lucio (INFN-LASA-Milano)

 $IMCC \ and \ MuCol \ldots \ / \ Report \ of \ Contributions$

Radiofrequency

Contribution ID: 114

Type: not specified

Radiofrequency

Wednesday 14 May 2025 10:50 (20 minutes)

Presenter: GRUDIEV, Alexej (CERN) **Session Classification:** Plenary

Accelerator design

Contribution ID: 115

Type: not specified

Accelerator design

Wednesday 14 May 2025 11:15 (20 minutes)

Presenter: ROGERS, Chris Session Classification: Plenary $IMCC \ and \ MuCol \ldots \ / \ Report \ of \ Contributions$

Technologies

Contribution ID: 116

Type: not specified

Technologies

Wednesday 14 May 2025 11:45 (25 minutes)

Presenter: LOSITO, Roberto (CERN) **Session Classification:** Plenary

Detectors and MDI

Contribution ID: 117

Type: not specified

Detectors and MDI

Wednesday 14 May 2025 12:20 (20 minutes)

Presenters: JINDARIANI, Sergo; PAGAN GRISO, Simone (Lawrence Berkeley National Lab. (US))

Welcome from organisers and logi ...

Contribution ID: 118

Type: not specified

Welcome from organisers and logistics

Monday 12 May 2025 14:00 (5 minutes)

Presenters: MELONI, Federico (DESY); KENNEDY, Kiley (Princeton University (US)); TAYLOR, Rebecca (CERN)

DESY Overview of Accelerator Di...

Contribution ID: 119

Type: not specified

DESY Overview of Accelerator Division

Monday 12 May 2025 14:15 (20 minutes)

What category does your poster fit in?

Presenters: MAIER, Andreas (MPL (Plasmabeschleuniger und Laser)); LEEMANS, Wim (M (Beschleuniger))

IMCC + MuCol Project Status and ...

Contribution ID: 120

Type: not specified

IMCC + MuCol Project Status and Direction

Monday 12 May 2025 14:40 (10 minutes)

Presenter: SCHULTE, Daniel (CERN) **Session Classification:** Plenary $\rm IMCC$ and $\rm MuCol\ldots~$ / Report of Contributions

Why a muon collider?

Contribution ID: 121

Type: not specified

Why a muon collider?

What did we submit to ESPPU?

Contribution ID: 122

Type: not specified

What did we submit to ESPPU?

Monday 12 May 2025 14:55 (15 minutes)

Presenter: MELONI, Federico (DESY) **Session Classification:** Plenary

US P5 + EPP Synergies

Contribution ID: 123

Type: not specified

US P5 + EPP Synergies

Monday 12 May 2025 15:15 (15 minutes)

What category does your poster fit in?

Presenter: PALMER, Mark

One Year Progress: Theory and Ph...

Contribution ID: 124

Type: not specified

One Year Progress: Theory and Physics

Monday 12 May 2025 16:00 (20 minutes)

What category does your poster fit in?

Presenter: HAN, Tao

One Year Progress: Detector Over ...

Contribution ID: 125

Type: not specified

One Year Progress: Detector Overview

Monday 12 May 2025 16:25 (20 minutes)

Presenter: CASARSA, Massimo (INFN-Trieste, Italy) **Session Classification:** Plenary

One Year Progress: Accelerator O...

Contribution ID: 126

Type: not specified

One Year Progress: Accelerator Overview

Monday 12 May 2025 16:50 (20 minutes)

Presenter: ROGERS, Chris Session Classification: Plenary

Siting Overview: CERN

Contribution ID: 127

Type: not specified

Siting Overview: CERN

Monday 12 May 2025 17:15 (20 minutes)

Presenter: MACTAVISH, Edward (CERN) **Session Classification:** Plenary

Siting Overview: US/Fermilab

Contribution ID: 128

Type: not specified

Siting Overview: US/Fermilab

Monday 12 May 2025 17:40 (20 minutes)

Presenter:ELDRED, JeffSession Classification:Plenary

 IMCC and $\operatorname{MuCol}\dots$ / Report of Contributions

Muon Beam Options

Contribution ID: 129

Type: not specified

Muon Beam Options

 $IMCC \ and \ MuCol \ldots \ / \ Report \ of \ Contributions$

Parameters for 2025

Contribution ID: 130

Type: not specified

Parameters for 2025

Friday 16 May 2025 10:25 (15 minutes)

What category does your poster fit in?

Presenter: TAYLOR, Rebecca (CERN)

Discussion Summary: Spent beam ...

Contribution ID: 131

Type: not specified

Discussion Summary: Spent beam extraction

Friday 16 May 2025 09:00 (5 minutes)

Presenter: LERNER, Giuseppe **Session Classification:** Plenary

Discussion Summary: Demonstrat ...

Contribution ID: 132

Type: not specified

Discussion Summary: Demonstrator and Instrumentation

Friday 16 May 2025 09:10 (5 minutes)

Presenter: ROSSI, Lucio (INFN-LASA-Milano)

Discussion Summary: Collider Co...

Contribution ID: 133

Type: not specified

Discussion Summary: Collider Configuration

Friday 16 May 2025 09:20 (5 minutes)

Discussion Summary: Physics

Contribution ID: 134

Type: not specified

Discussion Summary: Physics

Friday 16 May 2025 09:30 (5 minutes)

What category does your poster fit in?

Presenter: HOLMES, Tova (University of Tennessee, Knoxville)

Discussion Summary: Detector si ...

Contribution ID: 135

Type: not specified

Discussion Summary: Detector simulation and reconstruction

Friday 16 May 2025 09:40 (5 minutes)

What category does your poster fit in?

Presenters: ROSSER, Benjamin (University of Chicago); MADLENER, Thomas (FTX (FTX Fachgruppe SFT))

Discussion Summary: Diversity, E...

Contribution ID: 136

Type: not specified

Discussion Summary: Diversity, Equity, Inclusion, Access

Friday 16 May 2025 11:15 (5 minutes)

Presenter: DESIRE VALDOR, Paula **Session Classification:** Plenary

Discussion Summary: Early Caree ...

Contribution ID: 137

Type: not specified

Discussion Summary: Early Career Researchers

Friday 16 May 2025 11:25 (5 minutes)

Presenter: CALZOLARI, Daniele (CERN) **Session Classification:** Plenary

Discussion Summary: Funding an ...

Contribution ID: 138

Type: not specified

Discussion Summary: Funding and Collaboration Growth

Friday 16 May 2025 11:35 (5 minutes)

What category does your poster fit in?

Presenter: PASTRONE, Nadia (INFN-Torino)

Communication Opportunities

Contribution ID: 139

Type: not specified

Communication Opportunities

Friday 16 May 2025 12:00 (20 minutes)

What category does your poster fit in?

Presenter: BERNHARD-NOVOTNY, Kristiane

Joint Reports from Collaboration a ...

Contribution ID: 140

Type: not specified

Joint Reports from Collaboration and Board Meetings

Friday 16 May 2025 12:25 (15 minutes)

Steering Board, IMCC Collaboration Board, Governing Board

What category does your poster fit in?

Presenters: PASTRONE, Nadia (INFN-Torino); STAPNES, Steinar (CERN) Session Classification: Plenary $\rm IMCC$ and $\rm MuCol \dots \ / \ Report \ of \ Contributions$

Close Out Session

Contribution ID: 141

Type: not specified

Close Out Session

Friday 16 May 2025 12:45 (15 minutes)

Contribution ID: 142

Type: Talk

Search for Dark Matter in 2HDMS at LHC and future Lepton Colliders

We investigate the phenomenological prospects of the Two Higgs Doublet and Complex Singlet Scalar Extension (2HDMS) in the context of dark matter (DM) and Higgs phenomenology. The 2HDMS provides an enlarged Higgs sector along with a DM candidate. In this work, we perform an exhaustive scan to find representative benchmarks which are consistent with all theoretical and experimental constraints. We choose benchmarks with light, intermediate and massive DM masses and in some cases, also accommodate the 95 GeV excess in bb and $\gamma\gamma$ channels observed at the Large Electron-Positron Collider (LEP) and Large Hadron Collider (LHC). We focus on the relevant signatures at the LHC and at proposed future lepton colliders including electron-positron and muon colliders. Using a cut and count analysis, we show that while the High Luminosity LHC (HL-LHC) may give a hint of new physics, future lepton colliders prove to be efficient discovery probes for the 2HDMS.

What category does your poster fit in?

Theory

Primary authors: LI, Cheng (None); MOORTGAT-PICK, Gudrid (University of Hamburg / DESY); LAHIRI, Jayita (UNI/TH (Uni Hamburg, Institut fuer Theoretische Physik)); DUTTA, Juhi (None); ZIEGLER, Julia (UNI/TH (Uni Hamburg, Institut fuer Theoretische Physik)); TABIRA, Sheikh Farah (UHH (Universitaet Hamburg))

Presenter: ZIEGLER, Julia (UNI/TH (Uni Hamburg, Institut fuer Theoretische Physik))

Contribution ID: 143

Type: Poster

Preliminary Studies on Shock Wave Phenomena in a Liquid Lead Target Under High-EnergyPulse Deposition

Tuesday 13 May 2025 19:10 (20 minutes)

This study aims to determine the preliminary design parameters for developing a liquid lead target subjected to high peaks of deposited thermal power (10^{17} W/m^3) and deposition pulses on the order of nanoseconds. Under such conditions, previous studies and experiments have shown the formation of shock waves and splashing into the liquid lead target. The study utilizes the Mie-Gruneisen and Tait equations of state starting from the distribution of thethermal source on the target. CFD (Computational Fluid Dynamics) simulations are developed employing the VOF (Volume of Fluid) model. The simulations include a cavitation model for lead in low-pressure regions. A possible target configuration is also presented to mitigate the impact of shock waves on the structures. The results represent an initial steptoward developing more robust and efficient liquid metal targets. Further analyses will becarried out to refine the physical model of lead cavitation and to integrate it more accurately with the other physical phenomena involved.

What category does your poster fit in?

Other

Primary author: TRICARICO, Luca (Department of Industrial Engineering, Lab. of Montecuccolino, University of Bologna, Via dei Colli 16, 40136 Bologna, Italy.)

Co-authors: Mr CARRELLI, Carlo (ENEA Brasimone Research Center, 40032 Camugnano, Italy.); Mr FRANQUEIRA XIMENES, Rui (CERN—European Laboratory for Particle Physics, CH-1211 Geneva, Switzerland); Mr MANSERVISI, Sandro (Department of Industrial Engineering, Lab. of Montecuccolino, University of Bologna, Via dei Colli 16, 40136 Bologna, Italy.); Mr CANDIDO, Silvio (CERN—European Laboratory for Particle Physics, CH-1211 Geneva, Switzerland.)

Presenter: TRICARICO, Luca (Department of Industrial Engineering, Lab. of Montecuccolino, University of Bologna, Via dei Colli 16, 40136 Bologna, Italy.)

Session Classification: Poster

 $\rm IMCC$ and $\rm MuCol \dots \ / \ Report \ of \ Contributions$

Welcome

Contribution ID: 144

Type: not specified

Welcome

Monday 12 May 2025 14:05 (10 minutes)

Presenter: BEHNKE, Ties (DESY) **Session Classification:** Plenary

Breakdown in RF cavities for Muo...

Contribution ID: 145

Type: Poster

Breakdown in RF cavities for Muon Cooling channel

Tuesday 13 May 2025 19:10 (20 minutes)

RF Breakdown is a critical factor driving the design and limiting the performance of high gradient RF cavities. Within these high E-field cavities, localised field enhancement effects can occur due to microscopic surface imperfections - resulting in field strength of orders of magnitude greater than the cavity's average - leading to plasma formation, material damage/degradation and field emission.

In the context of the muon collider's cooling channel, a strong external magnetic field is superimposed (2-5T) on the existing RF field, increasing the risk of RF breakdown and limiting maximum gradients.

This poster presents CST simulations, supported by investigation of secondary electron yield distributions, which can be applied to understand the role of the static magnetic field in the breakdown dynamic.

What category does your poster fit in?

Muon Cooling

Primary author: KYLE, Robert Co-authors: RONALD, Kevin; ZHANG, Liang Presenter: KYLE, Robert

Session Classification: Poster
Physics simulations for a muon co...

Contribution ID: 146

Type: Talk

Physics simulations for a muon collider with Whizard

Tuesday 13 May 2025 08:40 (25 minutes)

Presenters: KILIAN, Wolfgang; KILIAN, Wolfgang (None); KILIAN, Wolfgang (University of Siegen)

Probing Electroweak NLO Correct ...

Contribution ID: 147

Type: Talk

Probing Electroweak NLO Corrections and Sudakov Logarithms at Multi-TeV Muon Colliders

Tuesday 13 May 2025 09:10 (25 minutes)

Primary author: MA, YangPresenters: MA, Yang; MA, Yang (University of Pittsburgh); MA, Yang (UCLouvain)Session Classification: Physics and Detector parallel

Energy driven results at a Muon C ...

Contribution ID: 148

Type: Talk

Energy driven results at a Muon Collider

Tuesday 13 May 2025 09:40 (25 minutes)

Primary author:GLIOTI, AlfredoPresenter:GLIOTI, AlfredoSession Classification:Physics and Detector parallel

 $\rm IMCC$ and $\rm MuCol\ldots$ / Report of Contributions

Contribution ID: 149

Type: Talk

1

1

Probing Z/W Pole Physics at High-...

Contribution ID: 150

Type: Talk

Probing Z/W Pole Physics at High-energy Muon Colliders via VBF Processes

Tuesday 13 May 2025 11:10 (25 minutes)

Presenter: TAN, Xiaoze

Why detect forward muons at a m...

Contribution ID: 151

Type: Talk

Why detect forward muons at a muon collider

Tuesday 13 May 2025 12:00 (25 minutes)

Presenter: SALVIONI, Ennio

Quark mixing from muon collider ...

Contribution ID: 152

Type: Talk

Quark mixing from muon collider neutrinos

Tuesday 13 May 2025 11:35 (25 minutes)

Presenter: MORALES, Manuel

 $\rm IMCC$ and $\rm MuCol\ldots$ / Report of Contributions

Contribution ID: 153

Type: Talk

1

1

 $\rm IMCC$ and $\rm MuCol\ldots$ / Report of Contributions

Contribution ID: 154

Type: Talk

1

1

Muonic forces at the muon collider

Contribution ID: 155

Type: Talk

Muonic forces at the muon collider

Tuesday 13 May 2025 16:35 (25 minutes)

What category does your poster fit in?

Presenter: FRANCESCHINI, Roberto

Search for Dark Matter in 2HDMS...

Contribution ID: 156

Type: Talk

Search for Dark Matter in 2HDMS at LHC and future Lepton Colliders

Tuesday 13 May 2025 17:05 (25 minutes)

What category does your poster fit in?

Presenters: ZIEGLER, Julia; ZIEGLER, Julia (UNI/TH (Uni Hamburg, Institut fuer Theoretische Physik))

Probing the Inert Doublet Model v...

Contribution ID: 157

Type: Talk

Probing the Inert Doublet Model via Vector-Boson Fusion at a Muon Collider

Tuesday 13 May 2025 17:35 (25 minutes)

Presenter: STYLIANOU, PanagiotisSession Classification: Physics and Detector parallel

Electroweak Symmetry Restoratio ...

Contribution ID: 158

Type: Talk

Electroweak Symmetry Restoration at High Energies: a Muon Collider as a Case Study

Tuesday 13 May 2025 10:45 (25 minutes)

What category does your poster fit in?

Presenter: HAN, Tao

Update on Interaction Region Desi ...

Contribution ID: 159

Type: not specified

Update on Interaction Region Design for 10 TeV

Thursday 15 May 2025 14:00 (12 minutes)

Presenter: VANWELDE, Marion

Update on the beam-induced back...

Contribution ID: 160

Type: not specified

Update on the beam-induced background studies for 3 TeV

Thursday 15 May 2025 14:15 (12 minutes)

What category does your poster fit in?

Presenter: CASTELLI, Luca

Update on the beam-induced back ...

Contribution ID: 161

Type: not specified

Update on the beam-induced background studies for 10 TeV

Thursday 15 May 2025 14:30 (25 minutes)

Presenter: CALZOLARI, Daniele (CERN)

Feedback from MUSIC detector stu ...

Contribution ID: 162

Type: not specified

Feedback from MUSIC detector studies for MDI design

Thursday 15 May 2025 15:00 (12 minutes)

Presenter: ZULIANI, Davide

Feedback from MAIA detector stu ...

Contribution ID: 163

Type: not specified

Feedback from MAIA detector studies for MDI design

Thursday 15 May 2025 15:15 (12 minutes)

Presenter:POWERS, Rose (Princeton University)Session Classification:Physics and Detector parallel

MDI Discussion

Contribution ID: 164

Type: not specified

MDI Discussion

Thursday 15 May 2025 15:30 (15 minutes)

Overview on Software Tools and R...

Contribution ID: 165

Type: Talk

Overview on Software Tools and Report from the Software Task Force

Thursday 15 May 2025 10:45 (22 minutes)

What category does your poster fit in?

Software & Simulations

Presenter: KRIZKA, Karol (Lawrence Berkeley National Laboratory)

Discussion Materials

Contribution ID: 166

Type: not specified

Discussion Materials

Tuesday 13 May 2025 14:00 (5 minutes)

Presenter: HOLMES, Tova (University of Tennessee, Knoxville) **Session Classification:** Topical discussion parallel $\rm IMCC$ and $\rm MuCol\ldots$ / Report of Contributions

Discussion

Contribution ID: 167

Type: not specified

Discussion

Tuesday 13 May 2025 14:05 (40 minutes)

Session Classification: Topical discussion parallel

Track Reconstruction

Contribution ID: 168

Type: not specified

Track Reconstruction

Thursday 15 May 2025 11:07 (22 minutes)

Presenter: ANDREETTO, Paolo (BELLE (BELLE II Experiment)) **Session Classification:** Physics and Detector parallel

Track Reconstruction using Quant ...

Contribution ID: 169

Type: not specified

Track Reconstruction using Quantum Computing

Thursday 15 May 2025 11:29 (15 minutes)

Presenter: YAP, Yee Chinn (FTX (FTX Fachgruppe SLB)) **Session Classification:** Physics and Detector parallel

Particle Flow Reconstruction - Stat ...

Contribution ID: 170

Type: not specified

Particle Flow Reconstruction - Status and Challenges

Thursday 15 May 2025 11:44 (22 minutes)

Presenter: PENN, Gregory (Yale University)

Computing Resources and Challen ...

Contribution ID: 171

Type: not specified

Computing Resources and Challenges

Thursday 15 May 2025 16:15 (22 minutes)

Presenter: PEDRO, Kevin (University of Maryland) **Session Classification:** Topical discussion parallel $\rm IMCC$ and $\rm MuCol \dots \ / \ Report \ of \ Contributions$

Discussion

Contribution ID: 172

Type: not specified

Discussion

Thursday 15 May 2025 16:37 (23 minutes)

Session Classification: Topical discussion parallel

 $\rm IMCC$ and $\rm MuCol \dots \ / \ Report \ of \ Contributions$

Discussion

Contribution ID: 173

Type: not specified

Discussion

Thursday 15 May 2025 12:06 (24 minutes)

SB composition and development

Contribution ID: 174

Type: not specified

SB composition and development

Thursday 15 May 2025 13:00 (10 minutes)

Presenter: STAPNES, Steinar (CERN)

IMCC Collaboration Board (ICB) h...

Contribution ID: 175

Type: not specified

IMCC Collaboration Board (ICB) https://indico.cern.ch/event/1547636/

Wednesday 14 May 2025 18:00 (1 hour)

https://indico.cern.ch/event/1547636/

What category does your poster fit in?

 IMCC and $\operatorname{MuCol}\dots$ / Report of Contributions

D&I IMCC

Contribution ID: 176

Type: not specified

D&I IMCC

Session Classification: Social

Target & Proton Extraction Discus ...

Contribution ID: 177

Type: not specified

Target & Proton Extraction Discussion

Tuesday 13 May 2025 14:00 (45 minutes)

Session Classification: Topical discussion parallel

LDG review in February and follo ...

Contribution ID: 178

Type: not specified

LDG review in February and follow up

Thursday 15 May 2025 13:10 (10 minutes)

R&D planning towards the LDG ro ...

Contribution ID: 179

Type: not specified

R&D planning towards the LDG roadmap update in 2026

Thursday 15 May 2025 13:20 (10 minutes)

 IMCC and $\operatorname{MuCol}\dots$ / Report of Contributions

IAC review

Contribution ID: 180

Type: not specified

IAC review

Thursday 15 May 2025 13:30 (10 minutes)

Next meetings and AOB

Contribution ID: 181

Type: not specified

Next meetings and AOB

Thursday 15 May 2025 13:40 (10 minutes)
IMCC and MuCol ... / Report of Contributions

Demonstrator Instrumentation

Contribution ID: 182

Type: not specified

Demonstrator Instrumentation

Thursday 15 May 2025 16:15 (20 minutes)

Session Classification: Topical discussion parallel

 $\rm IMCC$ and $\rm MuCol\dots$ / Report of Contributions

Cooling Cell

Contribution ID: 183

Type: not specified

Cooling Cell

Thursday 15 May 2025 16:35 (25 minutes)

Session Classification: Topical discussion parallel

Collider Reference Configuration...

Contribution ID: 184

Type: not specified

Collider Reference Configuration & Radial Build

Session Classification: Topical discussion parallel