IPAC'23 - 14th International Particle Accelerator Conference

Sunday 7 May 2023 - Friday 12 May 2023

Venice, Italy

Scientific Programme

MC1: Colliders and other Particle Physics Accelerators

MC1 covers accelerators (e.g. synchrotrons , linacs , ERLs) and storage rings providing colliding beams of hadrons or leptons for particle and nuclear physics, including the associated Machine Detector Interface (MDI) region. This includes operating experience and performance limitations, upgrade plans, accelerator physics and technology issues specific to colliders and the design and R&D for future projects. MC1 also includes accelerator-based fixed target machines, as discussed in Beyond Colliders or similar efforts in Particle and Nuclear Physics.

MC1.A01: Hadron Colliders

MC1.A02: Lepton Circular Colliders

MC1.A03: Linear Lepton Colliders

MC1.A08: Linear Accelerators

MC1.A09: Muon Accelerators and Neutrino Factories

MC1.A10: Damping Rings

MC1.A12: FFA

MC1.A16: Advanced Concepts

MC1.A17: High Intensity Accelerators

MC1.A18: Energy Recovery Linacs(ERLs)

MC1.A19: Electron-Hadron Colliders

MC1.A24: Accelerators and Storage Rings, Other

MC1.A25: Beyond Colliders

MC1.A26: Machine Detector Interface

MC1.T12: Beam Injection/Extraction and Transport

MC1.T19: Collimation

MC2: Photon Sources and Electron Accelerators

MC2 covers photon sources (synchrotron light sources, ERLs, FELs, laser systems, other free electron sources such as THz sources, Compton sources, etc.) and electron accelerators (linear, circular, recirculating, etc.). It includes insertion devices such as planar and helical field undulators. Associated accelerator systems, such as injectors, booster synchrotrons, photon beam lines and photon beam line components can also be proposed for this Session. Papers presented can be project descriptions or cover individual aspects of photon sources and electron accelerators. Both theoretical and experimental results are solicited.

MC2.A04: Circular Accelerators

MC2.A05: Synchrotron Radiation Facilities

MC2.A06: Free Electron Lasers

MC2.A07: Electrostatic Accelerators

MC2.A08: Linear Accelerators

MC2.A18: Energy Recovery Linacs (ERLs)

MC2.A23: Other Linac Based Photon Sources

MC2.A24: Accelerators and Storage Rings, Other

MC2.T02: Electron Sources

MC2.T12: Beam Injection/Extraction and Transport

MC2.T15: Undulators and Wigglers

MC2.T25: Lasers

MC2.T26: Photon Beam Lines and Components

MC3: Novel Particle Sources and Acceleration Techniques

MC3 covers (i) novel and unconventional sources of particles, including electrons and protons, neutrons, ions, and secondary particles and antiparticles; and (ii) new concepts of accelerating techniques which may overcome the present limitations of size and/or cost or which give access to very new beam characteristics (e.g. plasma accelerators, ultra high gradient vacuum accelerators). Novel here refers to technologies or parameters that are not yet widely used in operation.

MC3.A09: Muon Accelerators and Neutrino Factories

MC3.A12: FFA

MC3.A15: New Acceleration Techniques

MC3.A16: Advanced Concepts

MC3.A17: High Intensity Accelerators

MC3.A20: Radioactive Ions

MC3.A21: Secondary Beams

MC3.A22: Plasma Wakefield Acceleration

MC3.T01: Proton and Ion Sources

MC3.T02: Electron Sources

MC3.T28: Neutron Sources

MC4: Hadron Accelerators

MC4 covers design, development, construction, commissioning, operation and upgrades of low, medium and high energy hadron accelerators, excluding hadron colliders. This includes ion sources, electrostatic accelerators, proton and ion linear accelerators, proton and ion synchrotrons, radioactive beam facilities, antiproton accumulators and collectors, ion accumulator and storage rings, cyclotrons, synchrocyclotrons, FFAs and any other similar machines. Both low and high intensity machines are covered, as are all relevant aspects of high intensity fixed target accelerators such as proton or light ions drivers for neutron sources, neutrino factories, etc.

MC4.A04: Circular Accelerators

MC4.A07: Electrostatic Accelerators

MC4.A08: Linear Accelerators

MC4.A09: Muon Accelerators and Neutrino Factories

MC4.A11: Beam Cooling

MC4.A12: FFA

MC4.A13: Cyclotrons

MC4.A14: Neutron Spallation Facilities

MC4.A16: Advanced Concepts

MC4.A17: High Intensity Accelerators

MC4.A20: Radioactive Ions

MC4.A21: Secondary Beams

MC4.A24: Accelerators and Storage Rings, Other

MC4.T01: Proton and Ion Sources

MC4.T12: Beam Injection/Extraction and Transport

MC4.T19: Collimation

MC4.T20: Targetry and Dumps

MC4.T28: Neutron Sources

MC4.T32: Ion Beam Stripping

MC5: Beam Dynamics and EM Fields

MC5 covers general aspects of electro magnetic interactions of charged particle beams in accelerators and storage rings. This includes linear and non linear beam optics, modeling of externally applied or beam generated electro magnetic fields, as well as theory, observations and simulations of single particle dynamics and collective effects, both coherent and incoherent. The emphasis is on deepening the understanding of fundamental processes or limitations governing beam dynamics and uncovering possible new mechanisms relevant to accelerator design and performance, independent of technological or project specific aspects, including Machine Learning techniques.

MC5.D01: Beam Optics Lattices, Correction Schemes, Transport

MC5.D02: Non linear Single Particle Dynamics Resonances, Tracking, Higher Order, Dynamic Aperture, Code Deve

MC5.D03: Calculations of EM fields Theory and Code Developments

MC5.D04: Beam Coupling Impedance Theory, Simulations, Measurements, Code Developments

MC5.D05: Coherent and Incoherent Instabilities Theory, Simulations, Code Developments

MC5.D06: Coherent and Incoherent Instabilities Measurements and Countermeasures

MC5.D07: High Intensity Circular Machines Space Charge, Halos

MC5.D08: High Intensity in Linear Accelerators Space Charge, Halos

MC5.D09: Emittance manipulation, Bunch Compression and Cooling

MC5.D10: Beam Beam Effects Theory, Simulations, Measurements, Code Developments

MC5.D11: Code Developments and Simulation Techniques

MC5.D12: Electron Cloud and Trapped Ion Effects

MC5.D13: Machine Learning

MC6: Beam Instrumentation, Controls, Feedback and Operational Aspects

MC6 covers measurement and control of the beam properties in particle accelerators including beam diagnostics and instrumentation, beam feedback systems, low level rf controls, timing and synchronization schemes and laser based instrumentation for all types of accelerators including those for medical applications. Included also are contributions on accelerator control systems, online modeling and applications control software, as well as operational aspects of modern accelerators such as alignment and surveying methods, machine protection systems, radiation protection and monitoring and issues pertaining to reliability, and operability and applicable Machine Learning modalities.

MC6.A12: FFA

MC6.A27: Machine Learning and Digital Twin Modelling

MC6.A28: Medical Applications

MC6.T02: Electron Sources

MC6.T03: Beam Diagnostics and Instrumentation

MC6.T04: Accelerator/Storage Ring Control Systems

MC6.T17: Alignment and Survey

MC6.T18: Radiation Monitoring and Safety

MC6.T22: Reliability, Operability

MC6.T23: Machine Protection

MC6.T24: Timing and Synchronization

MC6.T25: Lasers

MC6.T26: Photon Beam Lines and Components

MC6.T27: Low Level RF

MC6.T33: Online Modelling and Software Tools

MC7: Accelerator Technology and Sustainability

MC7 covers design, construction, testing and performance of accelerator components or subsystems, with emphasis on technological aspects and methods. It includes radio frequency cavities and systems, magnets, vacuum, cryogenics, power supplies, collimation and targetry/dumps, timing, lasers, and other accelerator components and subsystems. Advanced technologies for accelerator component manufacture and technology specific sustainability are included. Contributions with emphasis on achieving beam performance specific to an accelerator type or design should generally be classified elsewhere.

MC7.T06: Room Temperature RF

MC7.T07: Superconducting RF

MC7.T08: RF Power Sources

MC7.T09: Room Temperature Magnets

MC7.T10: Superconducting Magnets

MC7.T11: Power Supplies

MC7.T13: Cryogenics

MC7.T14: Vacuum Technology

MC7.T15: Undulators and Wigglers

MC7.T16: Pulsed Power Technology

MC7.T19: Collimation

MC7.T20: Targetry and Dumps

MC7.T21: Infrastructures

MC7.T24: Timing and Synchronization

MC7.T25: Lasers

MC7.T31: Subsystems, Technology and Components, Other

MC7.T34: Permanent Magnets

MC7.T35: Advanced Manufacturing Technologies for Accelerator Components

MC7.T36: Sustainability

MC8: Applications of Accelerators, Technology Transfer and Industrial Relations and Outreach

MC8 includes contributions with emphasis on the broad applications of accelerators, the development of accelerator technologies for specific applications, aspects of technology transfer and laboratory industry relationships. This MC also includes Outreach and Commmunication for broad scientific dissemination. Also utilisation of test facilities for radiation exposure developments, as well as industrially focussed sustainability advances.

MC8.U01: Medical Applications

MC8.U02: Materials Analysis and Modification

MC8.U03: Transmutation and Energy Production

MC8.U04: Security

MC8.U05: Other Applications

MC8.U06: Technology Transfer and Lab Industry Relations

MC8.U07: Industrial Applications

MC8.U08: Environment

MC8.U09: Sustainability

MC8.U10: Outreach and Communications

MC8.U11: Radiation Effects – Testing Facilities and Strategies