

IPAC'27 - the 18th International Particle Accelerator Conference

May 23, 2027 - May 28, 2027

Huntington Place

Scientific Program

Plenary Talks

MC1: colliders and related accelerators

MC1 covers accelerators and storage rings providing colliding beams 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 specific to existing and future accelerators

MC1.A01: Hadron Colliders

MC1.A02: Lepton Circular Colliders

MC1.A03: Linear Lepton Colliders

MC1.A04: Circular Accelerators and Storage Rings

MC1.A07: Electrostatic Accelerators

MC1.A08: Linear Accelerators

**MC1.A09: Muon Accelerators, Neutrino Factories,
Muon Colliders**

MC1.A10: Damping Rings

MC1.A11: Beam Cooling

MC1.A12: Fixed Field Accelerators (FFA)

MC1.A16: Advanced Concepts

MC1.A17: High Intensity Accelerators

MC1.A18: Energy Recovery Linacs (ERLs)

MC1.A19: Lepton-Hadron Colliders

MC1.A20: Radioactive Ions

MC1.A25: Beyond Colliders

MC1.A26: Machine Detector Interface

MC1.A30: Polarized Beams

MC1.T12: Beam Injection/Extraction and Transport

MC1.T19: Collimation

MC2: photon sources and electron accelerators

MC2 covers photon sources and electron accelerators other than high energy or nuclear physics applications. It includes beam interactions with insertion devices, and associated accelerator

systems such as injectors, booster synchrotrons, photon beam lines and photon beam line components.

MC2.A04: Circular Accelerators

MC2.A05: Synchrotron Radiation Facilities

MC2.A06: Free Electron Lasers (FELs)

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.A25: THz sources

MC2.A26: Compton Sources

MC2.A29: Ultrafast electron diffraction and ultrafast electron microscopy (UED/UEM)

MC2.A30: Polarized beams

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: advanced acceleration techniques and novel particle sources

MC3 covers (i) New concepts of accelerating techniques, which may overcome the present limitations of size and/or cost or which give access to new beam characteristics. (ii) Novel and unconventional sources of particles, including electrons and protons, neutrons, ions, and

secondary particles and antiparticles. Novel here refers to technologies or parameters that are not yet widely used in operation.

MC3.A09: Muon Accelerators, Neutrino Factories, Muon Colliders

MC3.A12: Fixed Field Accelerators (FFAs)

MC3.A15: New Acceleration Concepts and Techniques

MC3.A16: Advanced Concepts

MC3.A17: High Intensity Accelerators

MC3.A20: Radioactive Ions

MC3.A21: Secondary Beams

MC3.A22: Plasma Wakefield Acceleration

MC3.A26: Compton sources

MC3.A30: Polarized beams

MC3.T01: Proton and Ion Sources

MC3.T02: Electron Sources

MC3.T25: Lasers

MC3.T28: Neutron Sources

MC3.T39: Positron 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 accumulators 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, Neutrino Factories,
Muon Colliders**

MC4.A11: Beam Cooling

MC4.A12: Fixed Field Accelerators (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.A30: Polarized beams

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 electromagnetic fields

MC5 covers general aspects of electro-magnetic interactions of charged particle beams in accelerators and storage rings. This includes linear and nonlinear beam optics, development of codes for modeling of externally applied or beam generated electro-magnetic fields, plus theory,

observations and simulations of single/multi particle dynamics and collective effects, independent of technological or project specific aspects.

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

MC5.D02: Nonlinear Single Particle Dynamics Resonances, Tracking, Higher Order, Dynamic Aperture, Code Developments

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

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

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

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: Polarized Beams

MC6: beam instrumentation, controls, 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 for all types of accelerators. Included also are contributions to 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, issues pertaining to reliability and operability.

MC6.A28: Medical Applications

MC6.T03: Beam Diagnostics and Instrumentation

MC6.T04: Accelerator/Storage Ring Control Systems

MC6.T05: Beam Feedback 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 both foundational technologies and emerging methods that drive advancements in the field. Included are advanced technologies and approaches for accelerator component manufacturing efficiency, and sustainable production, operation, and recycling

methods. Contributions with emphasis on achieving beam performance specific to an accelerator type or design should generally be classified elsewhere.

MC7.T06: Normal Conducting RF

MC7.T07: Superconducting RF

MC7.T08: RF Power Sources

MC7.T09: Normal Conducting Magnets

MC7.T10: Superconducting Magnets

MC7.T11: Power Supplies

MC7.T13: Cryogenics

MC7.T14: Vacuum Technology

MC7.T15: Undulators and Wigglers

MC7.T16: Pulsed Technology (magnet and power supplies)

MC7.T17: Alignment and Survey

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

MC7.T34: Permanent Magnets

MC7.T35: Advanced Manufacturing Technologies for Accelerator Components

MC7.T36: Sustainability

MC7.T37: Innovation Processes

MC7.T38: Mechanical Design

MC8: application of accelerators and engagement for industry and society

MC8 emphasizes the broad applications of accelerators across scientific, industrial and societal sectors, e.g., for detection, characterization, testing, treatment, processing, and modification. This MC also covers success stories and lessons learnt from technology transfer and other engagement with industry, as well as outreach and scientific communication activities.

MC8.U01: Health & Biology

MC8.U02: Materials Analysis and Modification

MC8.U03: Transmutation and Energy Production

MC8.U04: Isotope Production

MC8.U05: Security

MC8.U06: Environment

MC8.U07: Sustainability

MC8.U08: Radiation Effects

MC8.U09: Other Applications

MC8.U10: Technology Transfer and Lab Industry Relations

MC8.U11: Outreach and Communications

MC8.U12: Industrial Applications