

Physics Opportunities at an Electron-Ion Collider (POETIC) XII International Conference

15 February 2027 - 19 February 2027

Bambolim Beach Resort, Goa, India

Scientific Programme

Hadron Structure and QCD Spin Physics

- Parton Distribution Functions (PDFs)
- Transverse Momentum Dependent distributions (TMDs), generalized parton distributions (GPDs), Generalized Transverse-Momentum-Dependent distributions (GTMDs), Nucleon tomography
- Mechanical properties of the nucleon
- Small- x evolution, saturation and Color Glass Condensate (CGC)
- Non-perturbative QCD and Lattice in the context of EIC

Precision QCD and higher order calculations

- Precision calculations for DIS and SIDIS
- Monte Carlo event generators
- Diffractive and exclusive processes

Jet Physics, Hadronization, and Heavy Quarks

- Jet properties, jet substructure, and Energy-Energy Correlators (EECs)
- Fragmentation functions, hadronization mechanisms, and nuclear fragments
- Quarkonia production and heavy flavor physics

Complementarity with High-Energy Nuclear Collisions

- Connections between EIC physics and $p+p$, $p+A$, and $A+A$ collisions
- High- p_T processes, diffraction, and multi-parton interactions
- Quark-Gluon Plasma (QGP) and colored probes in hot nuclear matter

Advanced Computing and Information Theory

- Applications of Machine Learning and AI in ePIC and EIC-related physics
- Applications of Quantum computing and quantum information theory in HEP
- Entanglement and Bell-test studies in the EIC context

Future Facilities and Detector Programs

- Future DIS facilities: Accelerator and detector developments
- Program of the ePIC detector and opportunities with a second Interaction Region (IR) and detector

Beyond the Standard Model at the EIC