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Lattice QCD in the Frontier of Electron Ion Colliders

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In our quest to uncover the secrets of hadrons, a groundbreaking tool emerges—the Electron Ion Collider (EIC). Set to be constructed at the Brookhaven National Laboratory, the EIC will be one of the world's largest and most advanced accelerator facilities. With unmatched resolving power and intensity, it acts as a powerful microscope, allowing us to explore how hadrons emerge from the fundamental particles—quarks and gluons.

The synergy between real-world observations from the EIC and the virtual laboratory of Lattice Quantum Chromodynamics (Lattice QCD) is crucial, offering a comprehensive understanding of how these fundamental particles govern the emergence and properties of hadrons. Together, they promise to reveal the underlying components and dynamics, deepening our knowledge and marking a significant leap forward in the exploration of particle physics. This talk will highlight the pioneering and essential role of Lattice QCD in the upcoming EIC frontier.

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