Quantum Entanglement in High-Energy Particle Collisions

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Abstract. This study investigates the emergence of quantum entanglement during high-energy particle collisions. Using advanced simulation techniques, we explore the conditions under which entanglement is maximized and its implications for quantum information theories. Our findings suggest that specific collision energies can enhance entanglement, offering new insights into quantum state manipulation.

Keywords: Quantum Entanglement, Particle Collisions, Quantum Information, High-Energy Physics, Simulations

Introduction

Quantum entanglement, a fundamental aspect of quantum mechanics, has profound implications for the development of quantum technologies. In high-energy physics, the study of particle collisions provides a unique environment to observe and manipulate entangled states. This paper examines how quantum entanglement arises in particle collisions within accelerators. Using detailed simulations, we analyze the parameters influencing entanglement and propose methods to measure and enhance these effects. The research contributes to the broader understanding of quantum mechanics and its applications in quantum computing and communication.

References

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