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Poster "Quantum Kinetic Equation for Pair Production in a Laser Field: Is There a Berry Phase?"

Thursday 23 May 2024 14:00 (1 hour)

Abstract: "The phenomenon of pair production in a laser field holds significant implications for understanding fundamental aspects of quantum mechanics in intense electromagnetic environments. In this study, we delve into the dynamics of pair production within the framework of quantum kinetic equations, focusing particularly on the interplay between quantum coherence effects and the presence of a Berry phase. Our investigation aims to elucidate whether the Berry phase, a geometric phase arising from the adiabatic evolution of a quantum system, manifests itself in the context of pair production. Through rigorous theoretical analysis and numerical simulations, we explore the conditions under which the Berry phase may influence the dynamics of pair creation processes in laser fields. Our findings not only deepen our understanding of quantum phenomena in extreme conditions but also offer potential insights into harnessing quantum coherence for advanced technological applications."

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Session Classification: Kindergarten