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N-photon amplitudes from the worldline formalism

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In this presentation, I introduce the worldline formalism and its application to off-shell N-photon amplitudes, initially in vacuum and later in a constant electromagnetic field. I then explore the current status of the off-shell four-photon amplitude, emphasizing its practical applications in quantum electrodynamics. Finally, I examine the low-energy limit of the N-photon amplitude in a constant electromagnetic field, introducing a closed formula analogous to the vacuum case that enhances our understanding of strong-field effects.

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