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Title: Multi-Time Version of the Landau-Peierls Formulation of Quantum Electrodynamics

Abstract:
In 1930, Landau and Peierls wrote down the Hamiltonian of a simplified version of quantum electrodynamics in the particle-position representation. The model describes the emission and absorption of photons by electrons while leaving out pair creation and annihilation, in fact leaving out positrons altogether. I will present a multi-time version of their Schr\"odinger equation, which bears several advantages over their original equation: the time evolution equations are simpler and more natural; they are manifestly Lorentz covariant; and they are more transparent with respect to choice of gauge. I will discuss several aspects of these equations, including questions of gauge and consistency, and various open problems. This is joint work with Matthias Lienert.