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Studies on a trajectory-based approach to relativistic quantum-particle dynamics BILL POIRIER, HUNG-MING TSAI, Department of Chemistry and Biochemistry, Texas Tech University — In a recent paper [Bill Poirier, arXiv:1208.6260 [quant-ph]], a trajectory-based formalism has been constructed to study the relativistic dynamics of a single spin-zero quantum particle. Being a generally covariant theory, this formalism introduces a new notion of global simultaneity for accelerated quantum particles. In this talk, we present several examples based on this formalism, including the time evolution of a relativistic Gaussian wavepacket. Energy-momentum conservation relations may also be discussed.

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