

Christian Schubert - An Overview of the Worldline Formalism

Friday, 7 April 2023 09:00 (1 hour)

Title: An Overview of the Worldline Formalism

Abstract: I will give a short review of the worldline formalism, with an emphasis on recent developments. In Part 1 I will first discuss the basics of the formalism for the prototypical case of quantum electrodynamics. Nonabelian gauge theory will be treated next, including Ball-Chiu form factors and recent applications to Berends-Giele currents and color-kinematics duality. The extension to other standard model couplings will be shortly presented, using the examples of axion and Higgs decay into two photons. Part 2 will be devoted to gravity and curved space. Here I will discuss both the worldline approach and the string-based formalism of Bern-Dunbar-Shimada. Finally, I will also give a short introduction to the closely related worldline approach to classical black hole scattering.

Session Classification: colloquium