

The gauge-field propagator in light-cone gauge: which is the correct one?

There has been debate, in the literature, about the expression for the gauge field propagator in the light-cone gauge. We propose a solution to this question by evaluating the amplitude of the QED triangle diagram both in the covariant approach and in the light-front time-ordered perturbation theory (TOPT) approach, proving the equivalence between the two of them. We focus in particular on the role of those diagrams containing the exchange of an instantaneous photon, clarifying the relation between them and the alternative expressions of the gauge field propagator.