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Poincaré invariant UV regularization on the light-front and mass renormalization

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Mass renormalization for gauge theories in light-front perturbation theory (LFPT) has been a longstanding puzzle, leading to apparently inconsistent results in the literature. In this talk, I will show how to implement a fully Poincaré invariant UV regularization for LFPT calculations, like for example dimensional regularization. Within this approach, one obtains consistent and unambiguous results for mass renormalization at one loop. In particular, the mass correction for gauge bosons is now vanishing without the need for a counterterm. Moreover, the mass of charged or colored fermions is now renormalized in the same way in the numerator and in the denominator. The Poincaré invariant UV regularization should also have important consequences for the study of vacuum properties in LFPT.

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