Motivated by recent developments in pure gauge theories in terms of the so-called spinor-helicity formalism, in this article, the authors attempt to apply the formalism to an electroweak model. Since a massive treatment of the spinor-helicity formalism has been developed already [1, 2, 3] (see also the recent work [4]), the focus of this article is more on the phenomenological side. The main purpose of this paper is then to rewrite the standard Higgs-model Lagrangian such that it implements the massive version of the MHV (maximally helicity violating) rules. The resultant Lagrangian is lengthy (and even more so with fermions and QCD) but it is argued that, as in the massless cases, the Lagrangian does simplify the calculation of physical processes particularly when the number of involving particles is large.

The results may be useful for the confirmation of the MHV rules in comparison with experimental data. From a theoretical point of view, however, it is not clear why the Higgs mechanism can be applied to the spinor-helicity formalism. The reader should keep in mind that the massive spinor-helicity formalism itself may contain or lead to an alternative electroweak model with or without Higgs particles; this is an unsettled problem and currently under study by many researchers.

References

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