In this article, a supersymmetric extension of the MHV vertex expansion, also known as the Cachazo-Svrcek-Witten (CSW) rules, for $\mathcal{N} = 4$ super Yang-Mills theory is introduced. The supersymmetric version is obtained by use of a calculatory technique developed in [1] where a proof of the MHV vertex expansion for all tree amplitudes of $\mathcal{N} = 4$ super Yang-Mills theory is presented. The super MHV vertex expansion depends on four extra Grassmann variables, besides an ordinary reference spinor, which make the calculation of tree amplitudes simplified. The authors numerically indicate that this new method significantly reduces the number of diagrams involving the tree-level calculations in comparison to the cases of the ordinary MHV vertex expansion.

References

[1] H. Elvang, D. Z. Freedman and M. Kiermaier, JHEP **0906**, 068 (2009) [arXiv:0811.3624 [hep-th]].