

There has been progress in a dual formulation for pure non-Abelian Yang-Mills lattice gauge theory. One of the interesting results is a numerical computation for an $SU(2)$ gauge theory on a cubic three-dimensional lattice, executed in [1]. According to [1], extension of the three-dimensional formulation to a four-dimensional case contains some problem of finding an expression for local vertex amplitudes that can be simulated on a computer with reasonable feasibility. What is developed in this article under review is a solution to this problem by use of some diagrammatic methods in obtaining the vertex amplitudes. The resultant expressions will be useful for the application of the dual formulation to an $SU(2)$ gauge theory on a four-dimensional hypercubic lattice. It is also mentioned that actual simulations by use of this result are currently under way by the first author.

References

- [1] J. W. Cherrington, D. Christensen and I. Khavkine, Phys. Rev. D **76**, 094503 (2007) [arXiv:0705.2629 [hep-lat]].