This article can be understood as a follow-up to a recent study [1] on the computation of scattering amplitudes in a cubic scalar theory where the color factor of the scalar field is given by the adjoint of the products $U(N) \times U(\widetilde{N})$. In [1] it has been shown that the amplitudes contain a double-color-ordered structure and such a structure is closely related to gravity amplitudes and field-theory limits of superstring amplitudes.

In this article the author presents an alternative method to compute the double-color-ordered amplitudes by applying recent results [2, 3]. The author develops a recursive and algebraic algorithm to simplify the computation. The new result is applied to the computation of the so-called inverse KLT matrix [1] and rederive it in a simplified way mainly because of the use of recursive relations. The author also applies the result to the calculation of tree-level string amplitudes and proposes a simple formula in relation to the so-called BCJ numerators in tree amplitudes of super Yang-Mills theory.

References

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