

Recently, it is reported that tree-level *single-trace* Einstein-Yang-Mills (EYM) amplitudes with arbitrary number of gravitons can be expressed in terms of tree-level color-ordered amplitudes of pure Yang-Mills theory [1]. This expression has been made possible by developing a recursive relation among the tree-level single-trace EYM amplitudes with respect to the number of gravitons. According to [1], the recursive relation is obtained by imposition of the gauge invariance.

The article under review may be understood as a *multi-trace* version of these results. Namely, the authors study recursive expansions of the tree-level multi-trace EYM amplitudes with arbitrary number of gravitons and, eventually, show that the multi-trace EYM amplitudes can also be expressed in terms of the tree-level color-ordered Yang-Mills amplitudes. It is discussed that these results are in connection with other important results, such as the BCFW recursion relations, the CHY formula, and the BCJ relations of the multigluon amplitudes; relevant references on these relations can be found in the article.

References

- [1] C. H. Fu, Y. J. Du, R. Huang and B. Feng, JHEP **1709**, 021 (2017) doi:10.1007/JHEP09(2017)021 [arXiv:1702.08158 [hep-th]].