

This article is one of the follow-up papers to the proposal, made by Drummond, Henn, Korchemsky and Sokatchev in [1], regarding dual superconformal symmetry of scattering amplitudes in $\mathcal{N} = 4$ super Yang-Mills theory. The proposal states that L -loop amplitudes are in general proportional to the corresponding MHV (maximally helicity violating) amplitudes up to infrared divergences and that the proportionality is invariant under the dual superconformal symmetry. For the cases of one-loop NMHV (next to MHV) amplitudes, with total number of scattering gluons being $n = 6, 7, 8$, this proposition is confirmed in [2]. The article under review extends this analysis to arbitrary n , presenting an explicit form of the proportionality in terms of the so-called dual conformal cross-ratios. For one-loop amplitudes in general (regardless of either the helicity configuration or the number of scattering particles), the above proposal is later confirmed by Brandhuber, Heslop and Travaglini in [3]. For two-loop and higher-loop amplitudes, the proposal is not yet confirmed at present, however, recent progress shows it in a favorable way; see [4] and references therein.

References

- [1] J. M. Drummond, J. Henn, G. P. Korchemsky and E. Sokatchev, Nucl. Phys. B **828**, 317 (2010) [arXiv:0807.1095 [hep-th]].
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- [4] A. B. Goncharov, M. Spradlin, C. Vergu, A. Volovich, Phys. Rev. Lett. **105**, 151605 (2010). [arXiv:1006.5703 [hep-th]].