

Recently a duality between kinematic and color factors of tree amplitudes in gauge theories is proposed [1, 2]. In this article this so-called BCJ duality is studied from a perspective of superstring amplitudes which are computed in the pure-spinor formalism. It is shown that the same kinematic factors can be derived from the low-energy (or field-theory) limit of the superstring amplitudes. Under certain restrictions on the number of involving particles, the BCJ duality is then demonstrated as a consequence of the pure-spinor calculation of superstring amplitudes.

The bosonic part of these results indicates, after dimensional reduction to four dimensions, that the BCJ duality holds regardless of the number of supersymmetries or the types of helicity configurations. To realize the exact duality in the framework used in the article, however, it is also reported that the one has to sacrifice crossing symmetry for the kinematic factors. The results are expected to be useful for the study of non-planar sector of the  $\mathcal{N} = 4$  super Yang-Mills theory and also for the study of  $\mathcal{N} = 8$  supergravity as a double copy of gauge theory [2].

## References

- [1] Z. Bern, J. J. M. Carrasco and H. Johansson, Phys. Rev. D **78**, 085011 (2008) [arXiv:0805.3993 [hep-ph]].
- [2] Z. Bern, J. J. M. Carrasco and H. Johansson, Phys. Rev. Lett. **105**, 061602 (2010) [arXiv:1004.0476 [hep-th]].