

A combinatorial property of multiple polylogarithms at non-positive indices

K. Kitamura

Department of Mathematics

The University of Osaka

Osaka, Japan, 560-0043

u347758b@ecs.osaka-u.ac.jp

Abstract

The (double) shuffle relations for multiple polylogarithms at positive indices are well-known and have very beautiful properties. On the other hand, there are some analogy such as [1],[2] and [3] for MPL at non-positive (or general) indices. In this talk, we will show a new formula on products of MPL at non-positive indices in view of [4], and we will give some applications.

References

- [1] G. H. E. Duchamp, V. H. N. Minh, Q. H. Ngo, Harmonic sums and polylogarithms at non-positive multi indices, *Journal of Symbolic Computation*, **83**(2017)166-186, 2016, <https://doi.org/10.1016/j.jsc.2016.11.010>.
- [2] G. H. E. Duchamp, V. H. N. Minh, Q. H. Ngo, K. A. Penson, P. Simonnet, Mathematical renormalization in quantum electrodynamics via noncommutative generating series, *Applications of computer algebra*, 59100, 2017, <https://doi.org/10.48550/arXiv.1702.08550>.
- [3] Ebrahimi-Fard, Kurusch and Manchon, Dominique and Singer, Johannes, The Hopf Algebra of $(q-)$ Multiple Polylogarithms with Non-positive Arguments, *International Mathematics Research Notices*, **16**(2017) 4882-4922, 2016, <https://doi.org/10.48550/arXiv.1503.02977>.
- [4] H. Nakamura, Demi-shuffle duals of Magnus polynomials in a free associative algebra, *Algebraic Combinatorics*, **6**(2023) no.4 929-939, 2021, <https://doi.org/10.5802/alco.287>.