Experimenting with the Garsia-Milne Involution Principle

Shalosh B. EKHAD and Doron ZEILBERGER

In memory of Adriano M. Garsia (1928-2024) and in honor of Stephen C. Milne on his 75th birthday

Abstract: We use symbolic computation to find explicit expressions for the average, variance, and many higher moments, for the complexity of mappings produced by the amazing Garsia-Milne Involution Principle.

References

[GM1] Adriano M. Garsia and Stephen C. Milne, *Method for constructing bijections for classical partition identities*, Proc. Nat. Acad. Sci. U.S.A. **78** (1981), no. 4, 2026-2028.

[GM2] Adriano M. Garsia and Stephen C. Milne, *A Rogers-Ramanujan bijection*, J. Combin. Theory Ser. A **31** (1981), no. 3, 289-339.

[S] Andrew V. Sills, *An invitation to the Rogers-Ramanujan identities*, CRC Press, 2018.

[Z] Doron Zeilberger, *Enumerative and Algebraic Combinatorics*, in: "Princeton Companion to Mathematics" , (Timothy Gowers, ed.), Princeton University Press,550-561, 2008.

Shalosh B. Ekhad, Department of Mathematics, Rutgers University (New Brunswick), Hill Center-Busch Campus, 110 Frelinghuysen Rd., Piscataway, NJ 08854-8019, USA.
Email: `ShaloshBEkhad at gmail dot com` .

Doron Zeilberger, Department of Mathematics, Rutgers University (New Brunswick), Hill Center-Busch Campus, 110 Frelinghuysen Rd., Piscataway, NJ 08854-8019, USA.
Email: `DoronZeil at gmail dot com` .

Jan. 25, 2025