



New properties of multiple harmonic sums modulo p and p -analogues of Leshchiner's series

Khodabakhsh Hessami Pilehrood, Tatiana Hessami Pilehrood, Roberto Tauraso

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In this paper we present some new identities of hypergeometric type for multiple harmonic sums whose indices are the sequences $(1^a, c, 1^b)$, $(2^a, c, 2^b)$ and prove a number of congruences for these sums modulo a prime p . The congruences obtained allow us to find nice p -analogues of Leshchiner's series for zeta values and to refine a result due to M. Hoffman and J. Zhao about the set of generators of the multiple harmonic sums of weight 7 and 9 modulo p . Moreover, we are also able to provide a new proof of Zagier's formula for $\zeta^*(2^a, 3, 2^b)$ based on a finite identity for partial sums of the zeta-star series.

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