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On the number of additive permutations and Skolem-type sequences*

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Abstract: Cavenagh and Wanless recently proved that, for sufficiently large odd n , the number of transversals in the Latin square formed from the addition table for integers modulo n is greater than $(3.246)^n$. We adapt their proof to show that for sufficiently large t the number of additive permutations on $[-t, t]$ is greater than $(3.246)^{2t+1}$ and we go on to derive some much improved lower bounds on the numbers of Skolem-type sequences. For example, it is shown that for sufficiently large $t \equiv 0$ or $3 \pmod{4}$, the number of split Skolem sequences of order $n = 7t + 3$ is greater than $(3.246)^{6t+3}$. This compares with the previous best bound of $2^{\lfloor n/3 \rfloor}$.

Keywords: Additive permutation, Skolem sequence, transversal

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O številu aditivnih permutacij in zaporedjih Skolemovega tipa*

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Povzetek: Cavenagh in Wanless sta nedavno dokazala, da je za dovolj velike lihe n , število transverzal v latinskem kvadratu, dobljenem iz tablice seštevanja celih števil po modulu n , večje od $(3.246)^n$. Prilagodimo njun dokaz in pokažemo, da je za dovolj velike t število aditivnih permutacij na $[-t, t]$ večje od $(3.246)^{2t+1}$; nato izpeljemo nekaj precej izboljšanih spodnjih mej za števila iz zaporedij Skolemovega tipa. Na primer, pokažemo, da je za dovolj velike $t \equiv 0$ or $3 \pmod{4}$ število razcepljenih Skolemovih zaporedij reda $n = 7t + 3$ večje od $(3.246)^{6t+3}$. To primerjamo s prejšnjo najboljšo mejo $2^{\lfloor n/3 \rfloor}$.

Ključne besede: Aditivne permutacije, Skolemovo zaporedje, transverzala.

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*Zahvaljujeva se recenzentu za koristne komentarje in za to, da naju je opozoril na članke [6, 7, 8].

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