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"On the Galois group over $\mathbb{C}$ of a truncated binomial expansion"

Abstract: For positive integers $n$, the truncated binomial expansions of $(1+x)^n$ which consist of all the terms of degree $\leq r$ where $1 \leq r \leq n - 2$ appear always to be irreducible. For fixed $r$ and $n$ sufficiently large, this is known to be the case. We show here that for a fixed positive integer $r \neq 6$ and $n$ sufficiently large, the Galois group of such a polynomial over the rationals is the symmetric group $S_r$. For $r = 6$, we show the number of exceptional $n \leq N$ for which the Galois group of this polynomial is not $S_r$ is at most $O(\log N)$. 