

Exposé court

46 **Log-behaviour of quasi-polynomial-like functions**

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By a quasi-polynomial-like function, we mean any function $f(n)$ which grows as fast as a polynomial and takes the form

$$f(n) = t_k(n)n^k + t_{k-1}(n)n^{k-1} + \cdots + t_d(n)n^d + o(n^d),$$

where the coefficients $t_d(n), \dots, t_k(n) \in \mathbb{R}$ might depend on the residue class of n modulo some positive integer $M \geq 2$. For those types of functions, we investigate both the r -log-concavity problem and the higher order Turán inequalities. In particular, we apply the obtained results and deduce the analogous criteria in the case of the restricted partition function $p_{\mathcal{A}}(n, k)$ — that is the number of partitions of n with parts in a given multiset $\{a_1, a_2, \dots, a_k\}$ of positive integers.