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Title: On the counting function of sets with even partition functions

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Let q be an odd positive integer and $P \in F_2[z]$ be of order q and such that $P(0) = 1$. We denote by $\mathcal{A} = \mathcal{A}(P)$ the unique set of positive integers satisfying $\sum_{n=0}^{\infty} p(\mathcal{A}, n) z^n \equiv P(z) \pmod{2}$, where $p(\mathcal{A}, n)$ is the number of partitions of n with parts in $\mathcal{A}$. In [?], it is proved that if $A(P, x)$ is the counting function of the set $\mathcal{A}(P)$ then $A(P, x) \ll x(\log x)^{-r/\varphi(q)}$, where r is the order of 2 modulo q and φ is the Euler's function. In this paper, we improve on the constant $c = c(q)$ for which $A(P, x) \ll x(\log x)^{-c}$.

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