Abstract

Given integers k_1, k_2 with $0\le k_1<k_2$, the determinations of all positive integers q for which there exists a perfect Splitter $B[-k_1, k_2](q)$ set is a wide open question in general. In this paper, we obtain new necessary and sufficient conditions for an odd prime p such that there exists a nonsingular perfect $B[-1,3](p)$ set. We also give some necessary conditions for the existence of purely singular perfect splitter sets. In particular, we determine all perfect $B[-k_1, k_2](2^n)$ sets for any positive integers k_1,k_2 with $k_1 k_2\ge4$； we show that if k, n are positive integers with $k\ge2$ and there exists a perfect $B[-k 1, k](n)$ set, then $n=2k$. We also prove that there are infinitely many prime p such that there exists a perfect $B[-1,3](p)$ set.