Maximal sets of numbers not containing
$k+1$ pairwise coprime integers

Rudolf Ahlswede and Levon H. Khachatrian

Fakultät für Mathematik
Universität Bielefeld
Postfach 100 131

33501 Bielefeld
Germany

Abstract For positive integers k, n let $f(n, k)$ be the maximal cardinality of subsets of integers in the interval $< 1, n >$, which don't have $k+1$ pairwise coprimes. The set $\mathbb{E}(n, k)$ of integers in $< 1, n >$, which are divisible by one of the first k primes, certainly does not have $k+1$ pairwise coprimes.

Whereas we disproved in [1] an old conjecture of Erdös ([4], [5], [6], [7]) by showing that the equality

$$f(n, k) = |\mathbb{E}(n, k)| \tag{1}$$

does **not** always hold, we prove here that (1) holds for every k and all relative to k sufficiently large n.