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Colouring prime distance graphs. (In English)

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Let D be a set of prime numbers. The prime distance graph $Z(D)$ is the graph with integers as vertex set, and an edge between x and y precisely when $|x-y| \in D$. Easily one obtains for the chromatic number $\chi(D)$ of $Z(D)$ that $\chi(D) \leq 4$. By previous work of the authors $\chi(D)$ is known when $|D| \leq 3$, and the sets D with $\chi(D) = 1$ or 2 are classified. The paper under review is a contribution to the "Four Colour Problem for Prime Numbers": Characterize the sets D with $\chi(D) = 4$. We mention here only some results of the paper:
1) If p and $p+2$ are any twin primes, then $\chi(\{2, 3, p, p+2\}) = 4$.
2) If D is finite then $Z(D)$ has a periodic proper colouring using only $\chi(D)$ colours (several theorems concerning the smallest such period are given, and by means of a computer these periods are calculated for many examples).
3) There are finite sets D for which there exists aperiodic proper colourings using only $\chi(D)$ colours.

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05C15 Chromatic theory of graphs and maps
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