ON SMARANDACHE PSEUDO-PRIMES OF SECOND KIND

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Abstract. In this paper we prove that there exist infinitely many Smarandache pseudo-primes of second kind.

Let n be a composite number. If some permutation of the digits of n is a prime, then n is called a Smarandache pseudo-prime of second kind (see[1,Notion 65]). In this paper we prove the following result:

Theorem. There exist infinitely many Smarandache pseudo-primes of second kind.

Proof. Let the sequence $P=\{100r+1\}_{r=1}^{\infty}$. By Dirichlet's theorem (see[2,Theorem 15]), P contains infinitely many primes. Let

$$(1) \qquad p=\overline{a_k \dots a_2 a_1 a_0}$$

be a prime belonging to P. Then we have $a_0=1$ and $a_1=0$. Further let

$$(2) \qquad n=\overline{a_k \dots a_2 a_0 a_1}$$

Then we have $10 \mid n$, since $a_1=0$. Therefore, n is a composite number. Moreover, by (1) and (2), some permutation of the digits of n is prime p. It implies that n is a Smarandache pseudo-prime of second kind. Thus, there exist infinitely many Smarandache pseudo-primes of second kind. The theorem is proved.

Reference

1. Dumitrescu and Seleacu, Some Notions and Questions In Number Theory, Erhus Univ. Press, Glendale, 1994.
2. G.H.Hardy and E.M.Wright, An Introduction to the Theory of Numbers, Oxford Univ. Press, Oxford, 1938.