

Item: 1 of 19 | [Return to headlines](#) | [Next](#) | [Last](#)[MSN-Support](#) | [Help](#)Select alternative format: [BibTeX](#) | [ASCII](#)**MR2167722 (Review)**[Wolke, Dieter](#) (D-FRBG)**Primes with preassigned digits.***Acta Arith.* **119** (2005), *no. 2*, 201–209.[11N05](#)

Journal

Article

Doc  
Delivery**References: 0****Reference Citations: 0****Review Citations: 0**

In 1959, W. Sierpiński used Dirichlet's 1837 theorem on primes in arithmetic progressions to show that for any chosen base  $g \geq 2$  there exist infinitely many primes that have the first digit  $b$  and the last digit  $b'$  when expressed in base  $g$ , where  $b, b'$  are any fixed integers from  $\{1, 2, 3, \dots, g-1\}$  and  $(g, b) = 1$ .

In this paper the author generalizes this theorem to “admissible” vectors  $L$  of digits, of lengths 1 and 2. In fact, he estimates the number of such  $k$ -digit primes (in base  $g$ ) as

$$C_L \left(1 - \frac{1}{g}\right) \frac{g^k}{\log g^k} + O\left(\frac{g^k}{k^2}\right) \quad \text{as } k \rightarrow \infty,$$

where  $C_L$  is a constant depending only on the digit vector  $L$  and the base  $g$ .

With the help of the Riemann Hypothesis for the  $L$ -functions with characters modulo  $p^m$  ( $m \in \mathbb{N}_0$ ), it is also shown that the length of the “admissible” digit vectors could be increased considerably—all the way to  $(1 - \varepsilon)k^{1/2}$ . The proofs of both of these theorems are nice and compact.

**Reviewed** by [Filip Saidak](#)

© Copyright American Mathematical Society 2006