1077-11-472 **Maosheng Xiong*** (mamsxiong@ust.hk), Math. Department, Hong Kong University of Science and Technolog, Hong Kong, Hong Kong. *A note on Artin's primitive root conjecture.*

Let a be a rational number. For simplicity we assume that a is not a prime power of any rational number. A version of Artin's primitive root conjecture states that there are infinitely many primes p such that $a \pmod p$ is a primitive root. In an impressive paper in 1967, Hooley proved under the Generalized Riemann Hypothesis (GRH) that indeed the natural density of such primes exists, is positive and can be expressed explicitly as a infinite product over primes.

Let $f_a(p)$ denote the multiplicative order of $a \pmod p$. The purpose of this paper is to study the distribution of the value $(p-1)/f_a(p)$ as p runs over primes. We prove that under GRH, for any non-negative integer n, the natural density of primes p such that the number of prime factors of $(p-1)/f_a(p)$ equals n always exists, is positive and can be computed explicitly. In particular, when $n = 0$, this implies Artin's primitive root conjecture. (Received September 03, 2011)