Balasubramanian, R.; **Ramachandra, K.**

On the frequency of Titchmarsh's phenomenon for ζ (s). VI. (English) Zbl 0649.10028

Acta Arith. 53, No. 4, 325-331 (1989).

Let $E > 1$ be a fixed constant, $C \leq H \leq T/100$ and $K = Exp((D\log H)/(\log\log H))$ where C is a large positive constant and D an arbitrary positive constant. Then the main result is as follows. Theorem: There are $\geq TK^{-E}$ disjoint intervals I of length K each and all contained in [T,2T] such that the maximum of $|\zeta(1+it)|$ as t varies over I lies between

$$e^{\gamma}(\log\log K - \log\log\log K + O(1)) \quad \textit{and} \quad e^{\gamma}(\log\log K + \log\log\log K + O(1)).$$

In the proof of this theorem one of the tools is the main theorem of part V of this series [Ark. Mat. 26, No.1, 13-20 (1988)]. The authors also announce a forthcoming result by the reviewer regarding the maximum of $|\zeta(1+it)|$ over intervals I (contained in [T,2T]) of lengths $\geq C\log\log\log\log T$ and smaller intervals. Here a precise lower bound is given for intervals of length $\geq C\log\log\log\log T$ and statistical results for intervals of smaller lengths.

Reviewer: K.Ramachandra

MSC:

11M06 $\zeta(s)$ and $L(s,\chi)$

Keywords:

Riemann zeta-function; maximum of absolute value; upper and lower bounds

Full Text: EuDML