

AUTOMATIC SEQUENCES ALONG PIATETSKI-SHAPIRO NUMBERS

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ABSTRACT: The Thue-Morse sequence $t(n)$ can be defined as a sum of binary digits of $n \bmod 2$. For example, $t(100_2) = 1$, $t(111_2) = 1$, $t(10010_2) = 0$, and so on. It is also a special case of a sequence generated by a deterministic finite automaton. It is known that automatic sequences satisfy the Sarnak conjecture and under certain restrictions an analogue of the PNT. One direction of modern research concerns the behavior of $t(n)$ along quickly growing subsequences such as Piatetski-Shapiro numbers $\lfloor n^c \rfloor$ for $c > 1, c \notin \mathbb{Z}$, which “randomize” the original sequence. I will talk about recent results on the correlations of $\mu(n)t(\lfloor n^c \rfloor)$ and compare it to the case of a typical automatic sequence.

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