ON DISCRETE UNIVERSALITY IN THE SELBERG-STEUDING CLASS

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ABSTRACT: In 1975, the universality of the Riemann zeta-function $\zeta(s)$, $s = \sigma + it$, was discovered by S.M. Voronin [1]. This property states that every function in a sufficiently wide class of analytic functions can be approximated by the shifts $\zeta(s + i\tau)$, $\tau \in \mathbb{R}$. Many authors find some new universal zeta- and L-functions as well as function classes, use more complicated shifts for approximating analytic functions, found a number of theoretical and practical application problems, etc.

In the talk, we touch upon the universality of one important class of L-functions.

Let $\mathcal{S}$ be the class of Dirichlet series introduced by A. Selberg in [2] and modified by J. Steuding in [3], and let $0 < \gamma_1 < ... \leq \gamma_k \leq \gamma_{k+1} \leq ...$ be the sequence of the imaginary parts of the nontrivial zeros of the Riemann zeta-function. Using the modified Montgomery's pair correlation conjecture, we prove a universality theorem for a function $L(s)$ in $\mathcal{S}$ on approximation of analytic functions by the shifts $L(s + ih\gamma_k)$, $h > 0$.

[1] S.M. Voronin, Theorem on the "universality" of the Riemann zeta-function, *Math. USSR-Izv.*, vol. 9, no. 3, 443–453 (1975).

[2] A. Selberg, Old and new conjectures and results about a class of Dirichlet series, in: *Proc. of the Amalfi Conf. on Analytic Number Theory*, held at Maiori, Amalfi, Italy, 25–29 September, 1989; E. Bombieri et al. (eds.), University di Salerno, Salerno (1992), 367–385.

[3] J. Steuding, *Value-Distribution of L-Functions*, Lecture Notes Math., Vol. 1877, Springer, Berlin etc., 2007.

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