For example, the set $L(\alpha_1, \dots, \alpha_r)$ is linearly independent over $\mathbb{Q}$ for algebraically independent $\alpha_1, \dots, \alpha_r$.

Theorem 4 has the following weighted generalization [5].

THEOREM 5. *Suppose that the set $L(\alpha_1, \dots, \alpha_r)$ is linearly independent over $\mathbb{Q}$. For $j = 1, \dots, r$, let $k_j \in \mathcal{K}$ and $f_j(s) \in H(K_j)$. Then, for every $\varepsilon > 0$,*

$$\liminf_{T\to\infty} \frac{1}{U(T,w)} \int_{T_0}^{T} w(\tau) I\left(\left\{\tau \in [0,T] : \sup_{1\leqslant j\leqslant r} \sup_{s\in K_j} |\zeta(s+i\tau, \alpha_j) - f_j(s)| < \varepsilon\right\}\right) \mathrm{d}\tau > 0.$$

Moreover, the limit

$$\lim_{T\to\infty} \frac{1}{U(T,w)} \int_{T_0}^{T} w(\tau) I\left(\left\{\tau \in [0,T] : \sup_{1\leqslant j\leqslant r} \sup_{s\in K_j} |\zeta(s+i\tau, \alpha_j) - f_j(s)| < \varepsilon\right\}\right) \mathrm{d}\tau > 0$$

exists for all but at most countably many $\varepsilon > 0$.

For example, we can take $\alpha_1 = \frac{1}{\pi}, \dots, \alpha_r = \frac{1}{r\pi}$.

REFERENCES

1. Balčiūnas A., Vadeikis G. A weigthed universality theorem for the Hurwitz zeta-function // Šiauliai Math. Semin. 2017. V. 12(20). P. 5–18.

2. Gonek S. M. Analytic properties of zeta and L-functions. Thesis. Ann Arbor: University of Michigan, 1979.

3. Laurinčikas A. On the universality of the Riemann zeta-function // Lith. Math. J. 1995. V. 35. P. 244–251.

4. Laurinčikas A. On the joint universality of Hurwitz zeta-functions // Šiauliai Math. Semin. 2008. V. 3(11). P. 169–187.

5. Laurinčikas A., Vadeikis G. Joint weighted universality of the Hurwitz zeta-functions // Алгебра и анализ (вручено).

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Classical generators for category of coherent sheaves and the regular locus

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We give a necessity and sufficiency condition for a singularity category $\mathbf{D}_{sg}(X)$ of a Noetherian scheme X to have a classical generator. This is due to the openness of the regulor locus $Reg(X)$.

keywords: singularity category; classical generator; regulor locus; Noetherian scheme

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