Section 11: Complex Analysis	Poster number 127

Lower estimates for the integral means spectrum

Il'giz Kayumov, Kazan State University, Inst. of Math. and Mech..

ABSTRACT

The aim of the report is to obtain a new lower estimates for the integral means spectrum

$$\beta(t) = \overline{\lim}_{r \to 1-} \frac{\log \int |f'(re^{i\theta})|^t d\theta}{\log \frac{1}{1-r}}$$

of bounded univalent functions which are defined in $D = \{|z| < 1\}$. A best upper estimate belongs to Pommerenke. In particular, Pommerenke showed that $\beta(t) \leq 3t^2$ for sufficiently small t. In other direction Makarov proved that there exists a bounded univalent function such that $\beta(t) \geq 0.00035t^2$. Rohde improved this result. He showed that $\beta(t) \geq 0.117t^2$ for small t and $\beta(-1) \geq 0.109$ for some univalent and bounded function. Using Carleson-Jones ideas Kraetzer obtained numerical evidence that there exists a bounded univalent function such that $\beta(t) \geq t^2/4$.

We analytically show that there exists a bounded univalent function f such that $\beta(-1) \geq 0.127$ and $\beta(t) \geq 0.196t^2$ for small t.

Keywords: *integral means, univalent functions*

Mathematics Subject Classification: *30C*

Contact Address: `ikayumov@ksu.ru`