и Дирихле
$$\mathbb{D} = \{d(\alpha) = \limsup_{t\to\infty} t\psi_\alpha(t)\},$$
а одной из самых загадочных и удивительных теорем является теорема Кана-Мощевитина об осцилляции разности $\psi_\alpha(t) - \psi_\beta(t)$. Кроме "обычной" функции меры иррациональности $\psi_\alpha(t)$ есть много других похожих функций. В докладе будет рассказано об их свойствах и о некоторых задачах с ними связанных.

Groups with quadratic isoperimetric inequality

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Given a group G with a finite set of generators A and a finite set of defining relations R, the isoperimetric function (or Dehn function) $d(n)$ is the smallest function $\mathbf{N} \to \mathbf{N}$ with the following property. If a word w in the generators has length at most n and equal 1 in G, then w can be reduced to the empty word by at most $d(n)$ applications of the relations from R. It is easy to see that $d(n)$ is a recursive function (or bounded above by a recursive function) if and only if the group G has decidable word problem. Therefore Dehh function $d(n)$ can be regarded as a measure of the complexity of a finitely presented group.

The first examples of finitely presented groups with decidable word problem and undecidable conjugacy problems were found by P.S. Novikov and W.W. Boone in 50'-s (see [3]), and those examples have exponential Dehn function.

It is well known, that the conjugacy problem is decidable if $\liminf_{n\to\infty} d(n)/n^2 = 0$. With M.V. Sapir, we recently constructed finitely presented groups with quadratic Dehn function and undecidable conjugacy problem. This unimprovable estimate answers E. Rips' question of 1994. I will also mention some earlier helpful and related results of the groups with small Dehn functions [1, 2].

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