

TITLE: Asymptotic variance of the Beurling transform

ABSTRACT: Asymptotic variance can be used to measure the boundary behaviour of conformal maps and Bloch functions. A formula due to McMullen connects it to the Hausdorff dimension expansion of limit sets for certain dynamical families of conformal maps.

We introduce the asymptotic variance of the Beurling transform as a tool for studying Hausdorff dimension of quasicircles at infinitesimal level. As a result, we find  $k$ -quasicircles with dimension bigger than  $1+0.879k^2$  for small  $k$ . An upper bound for this asymptotic variance can be deduced from Smirnov's quasicircle estimates.

Finally, we also mention some very recent (and interesting) advances related to this topic.

The talk is based on a joint paper with K. Astala, O. Ivrii and I. Prause.