Chebyshev polynomials on multi-component sets

Maxim Zinchenko*

maxim@math.unm.edu

Chebyshev polynomials are the unique monic polynomials that minimize the sup-norm on a given compact set. These polynomials have important applications in approximation theory and numerical analysis. In 1969 H. Widom initiated a study of asymptotic behavior of Chebyshev polynomials on compact sets given by finite unions of smooth arcs/regions in the complex plane. He obtained several partial results on the norm and pointwise asymptotics of the polynomials and made several conjectures. The asymptotics in the general case remains elusive to this day. In this talk I will present some of the classical results as well as recent progress on Chebyshev polynomials on multi-component sets.

*Department of Mathematics and Statistics, University of New Mexico, 311 Terrace St. NE, Albuquerque, NM 87131, USA