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**Seminar of the Department of Mathematics and Statistics, University of Cyprus**

Room: 038, ΣΘΕΕ01. Date: 02/06/2017 Time: 12:00

**Speaker :** A. I. Aptekarev (Keldysh Institute of Applied Mathematics RAS)

**Title :** Asymptotics of extremal polynomials

**Abstract:**

We discuss an approach by Harold Widom to asymptotics of extremal polynomials. This seminal approach was proposed almost 50 years ago in [1]. The approach is applied to the asymptotics of sequences of monic polynomials $\left\{P\_{n}\right\}\_{n=0}^{\infty }$, deg$\left(P\_{n}\right)=n\rightarrow \infty $ which are orthogonal with respect to the Hermitian inner product in $L\_{2,ρ}\left(E\right)$ with weight function $ρ$ from the $Szeg\ddot{o}$ class on a system of Jordan curves and arcs E in the complex plane $C$. The main idea is to relate this asymptotics with the solution of an extremal problem in

the space of functions which are analytic in the domain bounded by this system of curves and arcs (namely, Hardy space $H\_{2,ρ}(Ω)$, $∂Ω=E$). The extremal problem then transformed to a boundary value problem whose solution provides the desired asymptotics.

In our talk we consider capabilities of this approach for finding asymptotics of the extremal polynomials in another spaces of analytic functions.

*References*

[1] H. Widom, Extremal polynomials associated with a system of curves in the complex plane, Advances in Math., 1969, 3, 127{232}.