

Normal behavior of derivatives of OPUC

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Abstract

Let μ be a non-trivial Borel measure on the unit circle \mathbb{T} , and $\{\varphi_n\}$ the corresponding sequence of orthonormal polynomials (OPUC). Let us denote by

$$\|f\|_{L^2_\mu} = \left(\int |f|^2 d\mu \right)^{1/2}$$

the weighted L^2 norm. We say that the sequence of derivatives $\{\varphi'_n\}$ exhibits a *normal behavior* if

$$\lim_n \|\varphi'_n/n\|_{L^2_\mu} = 1. \tag{1}$$

We discuss the connection of this problem with different relevant objects in the theory of OPUC, and present some necessary/sufficient conditions for (1).

This is a partial report of an ongoing joint work with B. Simon (Caltech).