



THE UNIVERSITY of
MISSISSIPPI
Department of Mathematics

Dissertation Defense

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Asymptotic Properties of Polynomials Orthogonal over Multiply Connected Domains

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Friday, April 28, 2017, 2:00 p.m.
Hume 321

Abstract: We investigate the asymptotic behavior of polynomials orthogonal over certain multiply connected domains. Each domain that we consider has an analytic boundary and is, in a strong sense, conformally equivalent to a canonical type of multiply connected domain called a circular domain. The two most general results involve the construction of a series expansion and an integral representation for these polynomials. We show that the integral representation can be utilized to derive more specific results when the domain of orthogonality is circular. In this case, we shed light on the manner in which the holes in the domain of orthogonality influence the polynomials.