



# Christoffel functions on Jordan curves with respect to measures with jump singularity<sup>†</sup>

Tivadar Danka

## Abstract

In this paper we establish asymptotic results for Christoffel functions with respect to measures supported on Jordan curves having a Radon-Nikodym derivative with a jump singularity. We extend the results known for measures supported in the interval  $[-1, 1]$  to more general sets, for example a system of Jordan curves, using polynomial inverse images. It is shown that the asymptotic limit can be written in terms of the equilibrium measure or Green's function.

**Keywords:** Christoffel function, asymptotic behavior, Jordan curve, equilibrium measure, Green's function.

**MSC:** Primary 42C05; Secondary 31A99.

## §1. Introduction

Let  $\mu$  be a Borel measure with compact support in the complex plane, and assume that  $\text{supp}(\mu)$  is an infinite set. The functions

$$\lambda_n(\mu, z) = \inf_{P_n(z)=1} \int |P_n|^2 d\mu, \quad (1.1)$$

<sup>†</sup>This research was supported by the European Research Council Advanced Grant No. 267055.

**Communicated by**  
G. López Lagomasino

**Received**  
October 7, 2014  
**Accepted**  
February 13, 2015