

Asymptotics of Sobolev Orthogonal polynomials on the unit ball

A. M. Delgado¹, L. Fernández¹, D. S. Lubinsky², T. E. Pérez¹, M. A.
Piñar¹

Sobolev orthogonal polynomials on the unit ball are studied. The corresponding Sobolev inner product is defined involving outward normal derivatives on the sphere. We will give explicit representation for orthogonal polynomials and reproducing kernels in term of classical polynomials on the ball. From these explicit expressions, algebraic properties and asymptotic behaviour of Christoffel functions will be deduced. These results can be found in [1].

References

- [1] A. M. DELGADO, L. FERNÁNDEZ, D. S. LUBINSKY, T. E. PREZ, AND M. A. PIAR, Sobolev orthogonal polynomials on the unit ball via outward normal derivatives, *J. Math. Anal. Appl.*, Available online 18 March 2016, <http://dx.doi.org/10.1016/j.jmaa.2016.03.041>.
- [2] C. F. DUNKL, Y. XU, Orthogonal Polynomials of Several Variables, second edition, *Encyclopedia of Mathematics and Its Applications*, Cambridge University Press, Cambridge, 2014.

¹Department of Applied Mathematics and IEMath–Math Institute, University of Granada, 18071 Granada, Spain
amdelgado@ugr.es, lidiafr@ugr.es, tperez@ugr.es, mpinar@ugr.es

²School of Mathematics, Georgia Institute of Technology, Atlanta, GA 30332 USA
lubinsky@math.gatech.edu