

DONALD E. MARSHALL

**Selected Publications**

1. Subalgebras of  $L^\infty$  containing  $H^\infty$ , *Acta Math.* 137 (1976), 91–98. MR 55#1074b

This paper proves a conjecture of R.G. Douglas characterizing algebras of bounded functions on the unit circle which contain  $H^\infty$ . For references to the history of this problem and an outline of the main ideas of the solution, see D. Sarason, Algebras between  $L^\infty$  and  $H^\infty$ , in Spaces of Analytic Functions, Kristiansand, Norway, 1975, Springer Lecture Notes No. 512.

2. On a Sharp Inequality Concerning the Dirichlet Integral, with S.-Y.A. Chang, *Amer. J. Math.* 107 (1985), 1015-1033. MR 87a:30055

This paper answers a question raised in a paper of Jürgen Moser, about the exponential integrability of functions with finite Dirichlet integral. See J. Moser, A sharp form of an inequality of N. Trudinger, *Ind. U. Math J.* 20(1971), 1077-1092

3. Critical Points of Green's Function, Harmonic Measure, and the Corona Problem, with P. Jones, *Ark. för Mat.* 23 (1985), 281-314. MR 87h:30101

This paper gives the solution to the corona problem on certain infinitely connected domains with “thick” complement, and proves a conjecture of Lennart Carleson about the  $L^p$  integrability of harmonic measure for homogeneous sets. See L. Carleson, Estimates of harmonic measure, *Ann. Acad. Sci. Fenn* 7 (1982), 25-32.

4. Frequency Domain Design and Analytic Selections, with J. W. Helton, *Indiana Univ. Math. J.* 39(1990), 157-184. MR 91d:93032

This paper proves existence, uniqueness and regularity of solutions to a certain optimization problem in frequency domain system design when stability is a key constraint, a central issue in  $H^\infty$ -control theory. See the textbook, *Classical Control Theory Using  $H^\infty$  methods*, by J.W. Helton and O. Merino for applications and numerical routines.

5. Harmonic Measure of Curves in the Disk, with C. Sundberg, *J. d'Anal. Math* 70(1996), 175-224.

This paper solves a problem of FitzGerald, Rodin and Warschawski about the comparison between the harmonic measure of a curve in the unit disk and the harmonic measure of its radial projection on the unit circle. It also answers a question of Fuchs about the best constant in Hall's lemma, for connected sets.

6. *Harmonic Measure*, with J. Garnett, Cambridge University Press, June 2005, 587 pp.

Chris Bishop has written a short, beautiful introduction to this area including a review of this book: *Bull. Amer. Math. Soc.* 44(2) (2007), 267-276.