Extract from OP-SF NET

Topic #3 ---------- OP-SF NET 20.3 --------- May 15, 2013

From: Walter Van Assche
Subject: Jacob Christiansen receives the 2013 Gábor Szegő prize

On Monday March 25, 2013, at the beginning of the 12th International Symposium on Orthogonal Polynomials, Specials Functions and Applications (OPSFA-12) in Sousse, Tunisia, the second Gábor Szegő prize winner was announced by Paco Marcellán, chair of the prize selection committee. Recall that the first Gábor Szegő prize was awarded in 2011 to Tom Claeys of Université Catholique de Louvain, Belgium; see OP_SF NET, Topic #2. The second prizewinner was announced as follows:

On the basis of our evaluation of the originality, independence and importance of his work, the Gábor Szegő Prize Committee, consisting of K. Driver, C. Dunkl, T. H. Koornwinder, F. Marcellán (Chair) and W. Van Assche, is proud to award the Gábor Szegő prize for 2013 to Jacob Stordal Christiansen.

Jacob Christiansen obtained his PhD at the University of Copenhagen in October 2004, with Christian Berg as his supervisor. The title of his thesis was "Indeterminate moment problems within the Askey-scheme". Since then he has been a postdoc at Katholieke Universiteit Leuven (1 year) and a Harry Bateman Research Instructor at CalTech (3 years). Starting in November 2008 he was an Assistant Professor (Steno Research Fellow) at the University of Copenhagen. In September 2012 he joined the Centre for Mathematical Sciences in Lund University, Sweden, as an Associate Professor.

At present, his CV lists 16 research publications of which five are in Constructive Approximation, one in Advances in Mathematics, one in Transactions of the American Mathematical Society, and one in Communications in Mathematical Physics, which can all be considered as very good journals. The papers mentioned in his nomination are
• Finite gap Jacobi matrices I. The isospectral case, Constr. Approx. 32 (2010), 1–65. (with B. Simon and M. Zinchenko)
• Finite gap Jacobi matrices II. The Szegő class, Constr. Approx. 33 (2011), 365–403. (with B. Simon and M. Zinchenko)
• Szegő's theorem on Parreau-Widom sets, Adv. Math. 229 (2012), 1180–1204.
• A moment problem and a family of integral evaluations, Trans. Amer. Math. Soc. 358 (2006), 4071–4097. (with M.E.H. Ismail)

as well as the paper

• Finite gap Jacobi matrices III. Beyond the Szegő class, Constr. Approx. 35 (2012), 259–272. (with B. Simon and M. Zinchenko)

since it is the continuation of the papers mentioned in the nomination.

His PhD thesis work on moment problems, resulting in several well cited papers including his 2006 paper with Ismail, was already very interesting work in a classical subject, with applications for the evaluation of certain integrals. But his really outstanding work started when he extended his interest to operator theory, in particular Jacobi matrices, which resulted in a very nice set of papers on finite gap Jacobi matrices. This is the result of his postdoctoral position at the California Institute of Technology (2005–2008) where he was able to work with B. Simon. This set of papers (117 pages of intricate mathematics) is a very profound and fairly complete analysis of this class of Jacobi matrices. According to Barry Simon's letter "Jacob took to it like a fish to water and soon Jacob was giving me tutorials on the subject.".

1 Jacob Christiansen in Kunhegyes, Hungary (June 2005)

The even more difficult problem of infinitely many gaps was worked out for Parreau- Widom sets and in our opinion this is his strongest paper so far.

Out of the 16 papers he wrote five as a single author, including his best paper (in Adv. Math.).
His co-authors include Barry Simon, Mourad Ismail and Erik Koelink, who are very well known in the OPSF community, and Malcolm Brown who is better known in the field of differential equations.

Jacob is very much present in the OPSF community as a participant at many of the OPSF conferences and other conferences and workshops within this area. He was one of the local organizers of the Seventh International Symposium on Orthogonal Polynomials, Special Functions and Applications in Copenhagen (August 18–22, 2003) and one of the editors of the proceedings, published in J. Comput. Appl. Math. 178 in 2005. He was an invited plenary speaker at the international conference on Asymptotics and Special Functions in Hong Kong (May-June, 2011).

As the recipient of the Gábor Szegő prize, Jacob was invited to give a plenary talk at the OPSFA-12 meeting. He chose to talk about Szegő's Theorem, which certainly was a very appropriate topic for the occasion.