Extract from OP-SF NET

Topic #1-----OP-SF Net 22.2------- March 15, 2015

From: Gábor Szegő prize selection committee
Subject: Official announcement of Gábor Szegő prize winner

The 2015 Gábor Szegő prize will be awarded to Karl Liechty of DePaul University in Chicago for his original work in the asymptotic analysis of orthogonal polynomials arising in models from statistical mechanics, in particular the six-vertex model and a model of non-intersecting random paths. Karl Liechty obtained his PhD in mathematics in 2010 from Indiana University-Purdue University Indianapolis where his PhD advisor was Pavel Bleher. After his PhD he spent one semester at the Mathematical Sciences Research Institute (MSRI) in Berkeley and then was a postdoc for three and a half years at the University Assistant Professor in their Department of Mathematical Sciences. Karl Liechty was already nominated for the 2013 Gábor Szegő prize for the following papers:

1. P. Bleher, K. Liechty: Exact solution of the six-vertex model with domain wall boundary conditions. Ferroelectric phase, Comm. Math. Phys. **286** (2009), 77–801.

2. P. Bleher, K. Liechty: Exact solution of the six-vertex model with domain wall boundary conditions. Critical line between ferroelectric and disordered phases, J. Stat. Phys. **134** (2009), 463–485.

3. P. Bleher, K. Liechty: Exact solution of the six-vertex model with domain wall boundary conditions. Antiferroelectric phase, Comm. Pure Appl. Math. **63** (2010), 779–829.

4. K. Liechty: Nonintersecting Brownian motions on the half-line and discrete Gaussian orthogonal polynomials, J. Stat. Phys. **147** (2012), 582–622.

More recently he has written a book with Pavel Bleher on Random Matrices and the Six-Vertex Model (CRM Monograph Series, vol. 32, 2014, Amer. Math. Soc., Providence RI, 224 pp.). In these papers and in the book, essential and non-trivial use is made of orthogonal polynomials. These novel applications of orthogonal polynomials not only helped to solve important problems in statistical physics, but also gave deeper insight into the asymptotic behavior of orthogonal polynomials of various kinds. These contributions to the asymptotic theory of orthogonal polynomials are original and profound. The fact that the results are motivated by physical problems is vital for the development of the area of orthogonal polynomials and special functions.

The selection committee:

Walter Van Assche (chair)
Kerstin Jordaan
Charles Dunkl
Jeff Geronimo
Peter Clarkson