CONSTRUCTIVE FUNCTIONS 2014 CONFERENCE AND SCHOOL

Schedule

Monday

• 8:30: Welcome in Wilson Hall room 103.
• 8:40-9:40: Plenary Address in Wilson Hall room 103.
• 9:40-10:00: Coffee Break sponsored by Springer in Wilson Lobby.
• 10:00-12:00: Contributed talk sessions in Wilson Hall 103, 115, and 126.
• 12:05-1:35: Lunch
• 1:35-2:35: Plenary Address in Wilson Hall room 103.
• 2:35-3:00: Coffee Break sponsored by Springer in Wilson Lobby.
• 3:00-5:30: Contributed talk sessions in Wilson Hall 103 and 126.
• 6:30-10:00: Reception at Wildhorse Saloon. Transportation departs from Wilson Hall at 6:15PM. Return shuttles back to Wilson Hall are available until 9:30PM.

Tuesday

• 8:30-9:30: Plenary Address in Wilson Hall room 103.
• 9:30-10:00: Coffee Break sponsored by Springer in Wilson Lobby.
• 10:00-12:00: Contributed talk sessions in Wilson Hall 103, 115, and 126.
• 12:05-1:35: Lunch
• 1:35-2:35: Plenary Address in Wilson Hall room 103.
• 2:35-3:00: Coffee Break sponsored by Springer in Wilson Lobby.
• 3:00-5:30: Contributed talk sessions in Wilson Hall 103 and 126.
• 7:15-9:50: School Lectures in Wilson Hall 103.

Wednesday

• 8:30-9:30: Plenary Address in Wilson Hall room 103.
• 9:30-10:00: Coffee Break sponsored by Springer in Wilson Lobby.
• 10:00-12:00: Contributed talk sessions in Wilson Hall 103 and 126.
• 12:05-1:35: Lunch
• 1:35-2:35: Plenary Address in Wilson Hall room 103.
• 2:35-3:35: Plenary Address in Wilson Hall room 103.
• 3:35-3:45: Conference Photo in Wilson Hall room 103.
• 7:15-9:50: School Lectures in Wilson Hall 103.
**Thursday**
- 8:30-9:30: Plenary Address in Wilson Hall room 103.
- 9:30-10:00: Coffee Break sponsored by Springer in Wilson Lobby.
- 10:00-12:00: Contributed talk sessions in Wilson Hall 103, 115, and 126.
- 12:05-1:35: Lunch
- 1:35-2:35: Plenary Address in Wilson Hall room 103.
- 2:35-3:00: Coffee Break sponsored by Springer in Wilson Lobby.
- 3:00-5:55: Contributed talk sessions in Wilson Hall 103 and 126.
- 7:00-11:00: Conference Dinner at Wyatt building on Vanderbilt campus. Cocktails are from 7:00-8:00 in the entry hall and dinner begins at 8:00 in the rotunda.

**Friday**
- 8:30-9:30: Plenary Address in Wilson Hall room 103.
- 9:30-10:00: Coffee Break sponsored by Springer in Wilson Lobby.
- 10:00-12:00: Contributed talk sessions in Wilson Hall 103 and 126.
- 12:05-1:35: Lunch
- 1:35-2:35: Plenary Address in Wilson Hall room 103.
- 2:35-4:15: Contributed talk sessions in Wilson Hall 103 and 126.
Monday: Wilson Hall Room 103

- 8:30-8:40 Welcome by Dean Sloop

- 8:40-9:30 Plenary Address by Vilmos Totik, *The tale of a formula* (Chair: Doron Lubinsky)

- Session: Mostly Students of Ed Saff (chair: Xiaoyan Liu)
  - 10:00-10:20 Sergiy Borodachov, *Pointwise optimal multivariate spline method for recovery of twice differentiable functions on a simplex*
  - 10:25-10:45 Peter Dragnev, *External Field Problems on the Hypersphere and Optimal Point Separation*
  - 10:50-11:10 Xin Li, *On Finite Blaschke Products Interpolating on the Unit Circle*
  - 11:15-11:35 H. N. Mhaskar, *Numerical differentiation and prediction of blood glucose levels in CGM*
  - 11:40-12:00 Natalia Zorii *Minimum Riesz energy problems for a condenser with “touching plates”*


- Session on Orthogonal Polynomials (chair: Maxim Yattselev)
  - 3:00-3:20 Walter Van Assche, *Computing recurrence coefficients of multiple orthogonal polynomials*
  - 3:25-3:45 Antonio Duran, *Extending Askey tableau by the inclusion of Krall and exceptional polynomials*
  - 3:50-4:10 Louis Garza, *Coherence relations for orthogonal polynomials on the unit circle*
  - 4:15-4:35 Kathy Driver, *Common and interlacing zeros of families of Laguerre polynomials*
  - 4:40-5:00 Jeff Geronimo, *Polynomials with no zeros on a face of the bidisk*
  - 5:05-5:25 Manuel de la Iglesias *Constructing bispectral orthogonal polynomials from the classical discrete families of Charlier, Meixner and Krawtchouk*
Monday: Wilson Hall Room 115

- **Session on Special Functions and Differential Equations** (chair: Mihai Stoiciu)
  - 10:00-10:20 Phillip Mashele, *Boundedness of (C,1) Means of the Generalized Series of the Second Kind for General Exponential Weights*
  - 10:25-10:45 Henrik Pedersen, *Extension of inverses of Gamma functions to the upper half plane*
  - 10:50-11:10 Oscar Ciaurri, *Vector-valued inequalities for operators associated to Jacobi and Laguerre functions*
  - 11:15-11:35 Vladimir Chelyshkov, *Alternative Jacobi polynomials and their counterparts*

Monday: Wilson Hall Room 126

- **Session on Approximation Theory** (chair: Ulises Fidalgo)
  - 10:00-10:20 Vladimir Andrievskii, *Approximation of Functions on a Complement of a John Domain*
  - 10:25-10:45 Hans-Peter Blatt, *Convergence in Capacity of Rational Approximants for Meromorphic Functions*
  - 10:50-11:10 Alexey Lukashov, *Approximation of sgn x by rational functions with fixed poles*
  - 11:15-11:35 Akil Narayan, *Univariate weighted Leja sequences as building blocks for sparse multivariate interpolation*
  - 11:40-12:00 Judit Minguez, *Zeros and rate of convergence of interpolation rational approximants*

- **Session on Polynomials and Matrices** (chair: TBD)
  - 3:00-3:20 Yamilet Quintana, *Measurable diagonalization of positive definite matrices and applications to non-diagonal Sobolev orthogonal polynomials*
  - 3:25-3:45 Kerstin Jordaan, *Quasi-orthogonality and real zeros of some \( \genfrac{}{}{0pt}{}{2}{F} \genfrac{}{}{0pt}{}{2}{2} \) and \( \genfrac{}{}{0pt}{}{3}{F} \genfrac{}{}{0pt}{}{2}{2} \) polynomials*
  - 3:50-4:10 Bernhard Beckermann, *Faber polynomials of matrices for non-convex sets*
  - 4:15-4:35 Francisca Perez-Valero, *Asymptotic behavior of the partial derivatives of Laguerre kernels and some applications*
  - 4:40-5:00 Thorsten Neuschel, *Plancherel-Rotach formulas and zero asymptotics for characteristic polynomials of random matrices*
  - 5:05-5:25 Marina Deikalova *Sharp Nikol’skii inequality for algebraic polynomials on an interval and on a sphere*
Tuesday: Wilson Hall Room 103

- 8:30-9:20 Plenary Address by Ian Sloan, *Zooming in – Multiscale RBF approximation can be locally refined* (chair: Joe Ward)

- **Session on Cubature and Approximation** (chair: Yuan Xu)
  - 10:00-10:20 Andri Bondarenko, *On Borsuk’s conjecture*
  - 10:25-10:45 Johann Brauchart, *Better than average – using random points on the sphere for benchmarks*
  - 10:50-11:10 Wolfgang Erb, *Weak limits and ratio asymptotics for weighted sums of orthogonal polynomials related to spherical harmonics*
  - 11:15-11:35 Quoc Thong Le Gia, *Discretization of stochastic heat equations with multiplicative noise on the unit sphere*
  - 11:40-12:00 Kendall Atkinson, *Extensions of boundary mappings*


- **Session on Discrete Minimum Energy** (chair: Henry Cohn)
  - 3:00-3:20 Brian Simanek, *Periodic Discrete Energy in Euclidean Space*
  - 3:25-3:45 Paul Leopardi, *Discrepancy, separation and Riesz energy of finite point sets on compact connected Riemannian manifolds*
  - 3:50-4:10 Gergely Ambrus, *Polarization problems*
  - 4:15-4:35 Manuel Jaraczewski, *On the Asymptotics of Discrete Minimal Riesz Energy on Regular Compact Sets*
  - 4:40-5:00 Yu Guang Wang, *Computation of isotropic random fields on spheres via needlets decomposition*
  - 5:05-5:25 Alexei Cheviakov, *The Narrow Escape Potential, Optimal Arrangements of N Traps on the Unit Sphere, and the Dilute Trap Limit for N >> 1*

- 7:15-8:30 School Presentation by Barry Simon, *Orthogonal Polynomials on Finite Gap Sets*

- 8:35-9:50 School Presentation by Henry Cohn, *Discrete Minimal Energy Problems*
Tuesday: Wilson Hall Room 115

- **Session on Numerical Analysis** (chair: Larry Harris)
  - 10:00-10:20 Simon Hubbert, *Thin Plate Spline Interpolation on the Unit interval*
  - 10:25-10:45 Andrei Bogatyrev, *Abelian integrals without quadratures*
  - 10:50-11:10 Wilhelmina Wise, *An open conjecture on the farthest distance function*
  - 11:15-11:35 Sylvain Chevillard, *Minimax principle and lower bounds in $H^2$ rational approximation*
  - 11:40-12:00 Michael Lachance, *Implications of Marden’s Theorem for Inscribed Ellipses*

Tuesday: Wilson Hall Room 126

- **Session on Number Theory and Polynomials** (chair: Igor Pritsker)
  - 10:00-10:20 Stephen Choi, *Sums of monomials with large Mahler measure*
  - 10:25-10:45 Paul Fili, *Some energy integrals with external fields related to heights*
  - 10:50-11:10 Maxim Yattselev, *Strong Asymptotics of Hermite-Padé Approximants for Angelesco Systems with Complex Weights*
  - 11:15-11:35 Charles Samuels, *Searching for optimal factorizations of rational numbers*
  - 11:40-12:00 Chris Sinclair, *Solvable ensembles of random polynomials*

- **Session on Spectral Theory** (chair: Jacob Christiansen)
  - 3:00-3:20 Mihai Stoiciu, *Spectral Properties of Discrete Random Schrödinger Operators with Small Coupling Constants*
  - 3:25-3:45 Milivoje Lukic, *Higher order Szegő theorems of arbitrary order*
  - 3:50-4:10 Maxim Zinchenko, *CMV Matrices with Super Exponentially Decaying Verblunsky Coefficients*
  - 4:15-4:35 Jake Fillman, *Continuum Schrödinger operators generated by aperiodic subshifts*
  - 4:40-5:00 Giorgio Mantica, *Numerical computation of orthogonal polynomials of equilibrium measures on Cantor sets, with application to conformal mappings and to the isospectral torus*
  - 5:05-5:25 Sergei Denissov *The estimates on the entropy for the spectral measure of the multidimensional Schrödinger operator*
Wednesday: Wilson Hall Room 103

• 8:30-9:20 Plenary Address by Guillermo Lagomasino, *On row sequences of Padé and Hermite-Padé approximation* (chair: Walter Van Assche)

• Session on Cubature and Approximation (chair: Ian Sloan)
  – 10:00-10:20 Joe Ward, *Kernel-Based Quadrature on Spheres and Other Manifolds, Part I*
  – 10:25-10:45 Sergei Pereverzyev, *Parameter choice strategies for least-squares approximation of noisy smooth functions on the sphere*
  – 10:50-11:10 Fran Narcowich, *Part II. A Novel Galerkin Method for Solving PDEs on the Sphere Using Highly Localized Kernel Bases*
  – 11:15-11:35 Rob Womersley, *Minimax problems for choosing point sets on the sphere*
  – 11:40-12:00 Yuan Xu, *Positive definite functions on the unit sphere*

• 1:35-2:25 Plenary Address by Sasha Aptekarev, *On a problem by Steklov* (chair: Bernhard Beckermann)

• 2:35-3:25 Plenary Address by Nikos Stylianopoulos, *Orthogonal Polynomials in the Complex Plane and Applications in Inverse Moment Problems* (chair: Darren Crowdy)

• 3:35-3:45 Conference Photo

• 7:15-8:30 School Presentation by Arno Kuijlaars, *Riemann-Hilbert Problems for Orthogonal and Multiple Orthogonal Polynomials*

• 8:35-9:50 School Presentation by Nick Trefethen, *Chebfun and Approximation*
• **Session on Wavelets and Frames** (chair: Jeff Geronimo)
  - 10:00-10:20 David Roach, *Parameterized Orthogonal Wavelets*
  - 10:25-10:45 Bruce Atkinson, *A greedy algorithm for selecting piecewise polynomial wavelets centered on a non-uniform knot sequence*
  - 10:50-11:10 Peter Luthy, *A Naimark-type Theorem for Parseval Frame MRA Wavelets and Ideas Related to Shift-invariant Spaces*
  - 11:15-11:35 Plamen Iliev, *A hypergeometric basis for the Alpert multi-resolution analysis*
  - 11:40-12:00 Lu Xiong, *IMS data analysis using Multi-resolution method and Markov Random Field*
Thursday: Wilson Hall Room 103

• 8:30-9:20 Plenary Address by Andrei Martinez-Finkelshtein, On the symmetry property for the equilibrium measures (chair: Arno Kuijlaars)

• Session on Polynomial Asymptotics (chair: Roderick Wong)
  – 10:00-10:20 Dan Dai, Critical edge behavior and the Bessel to Airy transition in the singularly perturbed Laguerre unitary ensemble
  – 10:25-10:45 Diego Dominici, Zero distribution of polynomials satisfying a differential-difference equation
  – 10:50-11:10 Min Huang, Distribution of Poles of Tritronquée Solutions to the First Painlevé Equation
  – 11:15-11:35 Guilherme Silva, Multiple orthogonal polynomials, a max-min energy problem ansatz and global trajectories of a quadratic differential
  – 11:40-12:00 Alfredo Deano, Large degree asymptotics of polynomials orthogonal with respect to oscillatory weights

• 1:35-2:25 Plenary Address by Nick Trefethen, Approximation theory seen through the eyes of Chebfun (chair: Lisa Lorentzen)

• Session on Polynomial Asymptotics (chair: Roderick Wong)
  – 3:00-3:20 Chunhua Ou, Exponentially-improved generalized asymptotic expansions for singularly perturbed BVPs
  – 3:25-3:45 Xiang-Sheng Wang, Asymptotics of hypergeometric orthogonal polynomials via difference equations
  – 3:50-4:10 Shuaixia Shu, Asymptotic expansions and sharp bounds for the Landau constants via a difference equation approach
  – 4:15-4:35 Lun Zhang, Multiple orthogonal polynomials associated with an exponential cubic weight
  – 4:40-5:00 Roderick Wong Asymptotics of the Meijer G-functions
  – 5:05-5:25 Yutian Li Asymptotic Approximations of the Wilson Polynomials via Recurrence Relations
Thursday: Wilson Hall Room 115

• Session on Approximation (chair: Kathy Driver)
  – 10:00-10:20 Wen-shin Lee, *Prony’s method in higher dimensions*
  – 10:25-10:45 Ulises Fidalgo, *Convergent interpolatory quadrature schemes*
  – 10:50-11:10 Ana Matos, *Well conditioned and robust Padé approximants*
  – 11:15-11:35 Sergio Medina, *Type I Hermite-Padé approximation for certain systems of meromorphic functions*
  – 11:40-12:00 Annie Cuyt, *Exponential analysis, Sparse interpolation and Padé approximation*

Thursday: Wilson Hall Room 126

• Session on Potential Theory (chair: Sergiy Borodachov)
  – 10:00-10:20 David Benko, *The signed equilibrium problem with log concave density*
  – 10:25-10:45 Ramon Orive, *Equilibrium problems in some rational external fields*
  – 10:50-11:10 Klaus Schiefermayr, *Sets of minimal logarithmic capacity and inverse polynomial images*
  – 11:15-11:35 Franck Wielonsky, *On a large deviation principle in potential theory*
  – 11:40-12:00 Mikhail Bilogliadov, *Asymptotics and stability of critical points of Riesz potential*

• Session on Approximation Theory (chair: Roger Barnard)
  – 3:00-3:20 Peter Grabner, *Lower bounds for spherical designs*
  – 3:25-3:45 Peter Boyvalenkov, *Polynomial techniques for investigation of spherical designs*
  – 3:50-4:10 Gert Tamberg, *On approximation properties of Shannon Sampling operators with bandlimited kernels*
  – 4:40-5:00 Bela Nagy, *Asymptotically sharp Bernstein type inequalities on different sets of the complex plane*
  – 5:05-5:25 Sergei Kalmykov *On asymptotically sharp Markov inequality on general compact sets*
  – 5:30-5:50 Michael Kiessling *N point configurations on the sphere with (putatively) optimal Riesz energy: A concavity study*
Friday: Wilson Hall Room 103

- **8:30-9:20 Plenary Address** by Arno Kuijlaars, *Random matrices and multiple orthogonal polynomials* (chair: Thorsten Neuschel)

- **Session: Students of Ed Saff** (chair: Peter Dragnev)
  - 10:00-10:20 Erwin Mina-Diaz, *On the leading coefficient of polynomials orthogonal over domains with corners*
  - 10:25-10:45 Maxim Yattselev, *Meromorphic extendibility and rigidity of interpolation*
  - 10:50-11:10 Abey Lopez-Garcia, *Multiple orthogonal polynomials on a star*
  - 11:15-11:35 Plamen Simeonov, *Formulas and identities for basic hypergeometric series involving the Askey-Wilson operator*
  - 11:40-12:00 Nattapong Bosuwan, *Determining Singularities Using Row Sequences of Padé-orthogonal Approximants*

- **1:35-2:25 Plenary Address** by Laurent Baratchart, *Inverse Potential Problems and higher dimensional Plemelj formulas* (chair: Andrei Martinez-Finkelshtein)

- **Session on Applied Analysis** (chair: Erwin Mina-Diaz)
  - 3:00-3:20 Robert Milson, *Exceptional Hermite Polynomials*
  - 3:25-3:45 Frode Ronning, *A glimpse of the history and properties of the Plastic Number*
  - 3:50-4:10 Juri Rappoport, *Constructive approximation of complex order modified Bessel functions*
Friday: Wilson Hall Room 126

- **Session on Applied Analysis** (chair: Peter Grabner)
  - 10:00-10:20 Darren Crowdy, *Uniformization of the isospectral torus for finite-gap Jacobi matrices*
  - 10:25-10:45 Larry Harris, *Lagrange Polynomials, Reproducing Kernels and Cubature in Two Dimensions*
  - 10:50-11:10 Roger Barnard, *Tail Median Estimation vs Tail Mean Estimation: Evidence from the Exponential Power Distribution*
  - 11:15-11:35 Michael Revers, *Polynomial Interpolation around the Bernstein Constant*
  - 11:40-12:00 Viktor Maymeskul, *On the Fixed Point Theorem in $\mathbb{R}^2$*

- **Session on Function Theory** (chair: TBD)
  - 3:00-3:20 Shen Shan, *New representation theorems for completely monotone and Bernstein functions with convexity properties on their measures*
  - 3:25-3:45 Polina Glazyrina, *Hardy–Littlewood type inequalities for fractional integrals*
  - 3:50-4:10 Santosh Joshi, *On a subclass of harmonic univalent functions defined by convolution*
Event Schedule

- **Monday 6:30-10:00:** Reception at the Wildhorse Saloon (120 2nd Ave N, Nashville, TN 37201). Transportation provided via shuttle leaving from the parking lot behind Wilson Hall starting at 6:15PM. Return transportation is available until 9:30PM.

- **Thursday 7:00-11:00PM:** Conference Dinner at Wyatt building. Cocktails served from 7:00-8:00 and dinner is served at 8:00. Limited transportation will be available from Wilson Hall to the dinner venue beginning at 6:15PM. Return transportation will also be available starting at 9:30PM.

- **Friday 4:15-5:30:** Closing party sponsored by Pearson in Wilson Hall Lobby.