

Workshop on
“MAIA 2019: Multivariate Approximation and Interpolation with Applications”

August 26 – 30, 2019

organized by

**Maria Charina (U Vienna), Karlheinz Gröchenig (U Vienna), Philipp Grohs (U Vienna),
Johannes Wallner (TU Graz)**

• **Monday, August 26, 2019**

09:00 – 09:30 **Registration**

09:30 – 09:35 **Welcome**

09:35 – 10:25 **Mihai Putinar**

Christoffel-Darboux analysis

10:30 – 11:00 *Coffee / Tea Break*

11:00 – 11:50 **Larry Schumaker**

The Immersed Penalized Boundary Method for solving PDE's

11:55 – 12:25 **Olga Mula**

Optimal reduced model algorithms for data-based state estimation

12:30 – 14:00 *Lunch Break*

14:00 – 14:30 *Coffee / Tea / Discussions*

Section B: in Boltzmann Lecture Hall

14:30 – 15:00 **Peter Binev**

Near-optimal adaptive approximations

15:05 – 15:35 **Shai Dekel**

Artificial intelligence based approach to numerical PDE's

15:40 – 16:10 **Reinhold Schneider**

Reduced Isometry Property (RIP) for variational Monte Carlo methods

Section S: in Schrödinger Lecture Hall

14:30 – 15:00 **Jean-Louis Merrien**

A simplex spline basis for the Alfeld split in \mathbb{R}^n

15:05 – 15:35 **Oleg Davydov**

Error bounds for a least squares meshless finite difference method

15:40 – 16:10 **Lars-Benjamin Maier**

Approximation of functions and functionals on submanifolds by ambient splines

- **Tuesday, August 27, 2019**

09:00 – 09:50 **Wolfgang Dahmen**

Tensor approximability and high dimensional diffusion equations

09:55 – 10:25 *Coffee / Tea Break*

10:25 – 11:15 **Helmut Bölcskei**

Fundamental limits of deep neural network learning

11:20 – 12:10 **Nira Dyn**

Non-linear subdivision schemes refining point-normal pairs

12:15 – 14:10 *Lunch Break*

Section B: in Boltzmann Lecture Hall

14:10 – 14:40 **Bernard Mourrain**

Decomposition of moment series

14:45 – 15:15 **Benedikt Diederichs**

Localizing functions and stability of Sparse Frequency Estimation

Section S: in Schrödinger Lecture Hall

14:10 – 14:40 **Hartmut Prautzsch**

Cutting edge refinement

14:45 – 15:15 **Ulrich Reif**

Watertight trimmed NURBS surfaces

15:20 – 15:50 *Coffee / Tea*

15:20 – 17:15 *Interactive presentations by Anat Amir, Elena Berdysheva, Costanza Conti, Jeremy Levesly, Thomas Mejstrik, Maria Lucia Romani, Lucia Sampoli, Tomas Sauer, Alberto Viscardi, Felix Voigländer and NuHAG*

17:15 – 19:00 **Conference Reception at ESI**

- **Wednesday, August 28, 2019**

09:00 – 09:50 **Holger Rauhut**

Recovery of functions of many variables via compressive sensing

09:55 – 10:25 *Coffee / Tea Break*

10:25 – 11:15 **Ding-Xuan Zhou**

Approximation theory of deep convolutional nets

11:20 – 11:50 **Angela Kunoth**

Recent results on empirical mode decomposition schemes

11:55 – ... **Free Afternoon**

• **Thursday, August 29, 2019**

09:00 – 09:50 **Anthony Nouy**

Learning with tree tensor networks

09:55 – 10:25 *Coffee / Tea Break*

10:25 – 11:15 **Leonard Peter Bos**

Multivariate polynomial interpolation and optimal designs

11:20 – 12:10 **Vladimir Protasov**

Regularity of multivariate wavelets and synchronizing automata

12:15 – 14:00 *Lunch Break*

14:00 – 14:30 *Coffee / Tea / Discussions*

Section B: in Boltzmann Lecture Hall

14:30 – 15:00 **David Levin**

Some remarks on multivariate approximation

15:05 – 15:35 **Amos Ron**

New insights into multivariate spline functions

15:40 – 16:10 **Jesus Carnicer**

Extensions of planar GC sets and syzygy matrices

Section S: in Schrödinger Lecture Hall

14:30 – 15:00 **Juan Manuel Pena**

Conditioning, stability and accuracy in univariate and multivariate problems of approximation theory and C.A.G.D.

15:05 – 15:35 **Hartmut Führ**

Classification of Besov-type decomposition spaces

15:40 – 16:10 **Alexandr Kozynenko**

Piecewise constant approximation for multivariate functions

• **Friday, August 30, 2019**

09:00 – 09:50 **Tomas Sauer**

Generalized Convolutions

09:55 – 10:25 *Coffee / Tea Break*

10:25 – 10:55 **Tom Lyche**

Interesting Splits

11:00 – 11:30 **Jose Luis Romero**

Sampling multivariate functions along curves

11:35 – 12:05 **Gerlind Plonka**

Reconstruction of non-stationary signals by the generalized Prony method

12:10 – 14:00 *Lunch Break*

14:00 – 14:30 **Stefano de Marchi**

Polynomial interpolation via mapped bases without resampling

14:35 – 15:05 *Coffee / Tea Break*

15:05 – 15:35 **Felix Voigtlaender**

Approximation in $L_p(\mu)$ with deep ReLU neural networks

15:40 – 16:10 **Marcin Bownik**

Exponential frames and syndetic Riesz sequences

16:15 – 16:20 **Closing**

All talks take place at ESI, Boltzmann Lecture Hall! Unless stated otherwise.