

# 12<sup>th</sup> International Conference Nonlinear Analysis, Function Spaces and Applications

*Prague, Czech Republic, May 30–June 3, 2022*

The 12th conference, which continues the series of eleven conferences organized by the [Institute of Mathematics of the CAS](#) and the [Charles University](#) in 1978, 1982, 1986, 1990, 1994, 1998, 2002, 2006, 2010, 2014 and 2018, will take place in Prague from Monday, May 30, to Friday, June 3, 2022.

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# DATE & VENUE

## DATES

May 30–June 3, 2022 (Mon–Fri)

## VENUE

Faculty of Electrical Engineering, Czech Technical University in Prague  
Technická 2, Prague 6, Czech Republic  
Room No. C3-135

# ORGANIZERS

Faculty of Electrical Engineering, Czech Technical University in Prague

## ORGANIZING COMMITTEE

Zdeněk Mihula (Chair)

Hana Turčinová

Luboš Pick

# SOCIAL PROGRAM

## WEDNESDAY, June 1, 2022

### Sightseeing tour of Prague (walking tour)

14:30 Meeting point at the conference venue

14:30 – 17:30 Walking tour

Places of interest: Prague Castle, Nerudova street, Charles Bridge, Malostranské Square, Old Town of Prague, Old Town Square

The tour will finish in the Restaurant & Club Lávka.

### Conference dinner

17:30 – 22:00

Restaurant & Club Lávka

Novotného lávka 1, Prague 1

### HOW TO GET TO DIRECTLY TO THE DINNER

20 min from “Dejvická” station.

2 stops by metro Line A from “Dejvická” station to Staroměstská station.

Restaurant & Club Lávka is located 500m from the station (1 stop by Tram to “Karlovy lázně” stop).

# SCIENTIFIC PROGRAM

## MONDAY, MAY 30, 2022

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8:00 Registration

8:30 **Opening ceremony**

9:00 – 9:50 **Invited lecture**  
**Symmetric gradient Orlicz-Sobolev spaces**  
*Andrea Cianchi | University of Florence*

10:00 – 10:50 **Invited lecture**  
**Strongly nonlinear multiplicative inequalities with elliptic operators**  
*Agnieszka Kałamańska | University of Warsaw*

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10:50 – 11:20 *Coffee break*

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11:20 – 12:10 **Invited lecture**  
**Supercaloric functions for the parabolic p-Laplace equation**  
*Juha Kinnunen | Aalto University*

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12:10 – 14:30 *Lunch break*

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14:30 – 15:20 **Invited lecture**  
**Weighted inequalities involving Hardy operators,  
new results and applications**  
*Amiran Gogatishvili | Institute of Mathematics, CAS*

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15:20 – 15:50 *Coffee break*

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15:50 – 16:10 **Marcinkiewicz-Zygmund inequalities for scattered and random data  
on the q-sphere**  
*Thomas Jahn | TU Chemnitz*

- 16:10 – 16:30**    **Rate-optimal sparse approximation of compact break-of-scale embeddings**  
*Janina Hübner | Ruhr University Bochum*
- 16:30 – 16:50**    **Regularity results for parabolic PDEs in scale of Besov and weighted Sobolev spaces**  
*Flóra Szemenyei | Friedrich-Alexander-Universität Erlangen-Nürnberg*
- 16:50 – 17:10**    **Optimal domains for the Cesaro operator minus Identity**  
*Sorina Barza | Karlstad University*
- 17:10 – 17:30**    **Monotonicity in ordered measure spaces**  
*Alejandro Santacruz Hidalgo | Western University, London, ON*
- 17:30 – 17:50**    **Existence of parabolic minimizers to the total variation flow on metric measure spaces**  
*Cintia Pacchiano | Aalto University*
- 17:50 – 18:10**    **Hausdorff dimension of the critical set for violation of the Lusin N condition**  
*Tomáš Roskovec | University of South Bohemia in Ceske Budejovice, University of Hradec Kralove*

## TUESDAY, MAY 31, 2022

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**9:00–9:50**        **Invited lecture**  
**Strongly nonlinear multiplicative inequalities with elliptic operators**  
*Agnieszka Kałamajska | University of Warsaw*

**10:00–10:50**    **Invited lecture**  
**Symmetric gradient Sobolev spaces**  
*Andrea Cianchi | University of Florence*

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*10:50–11:20*    *Coffee break*

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**11:20–12:10**    **Invited lecture**  
**Supercaloric functions for the parabolic p-Laplace equation**  
*Juha Kinnunen | Aalto University*

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12:10–14:30    *Lunch break*

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**14:30 – 15:20**    **Invited lecture**  
**Gradient flows in metric spaces in applications to solid mechanics**  
*Martin Kružík | Institute of Information Theory and Automation, CAS*

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15:20–15:50    *Coffee break*

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**15:50 – 16:10**    **Weak limit of homeomorphisms in  $W^{1,n-1}$  and (INV) condition**  
*Anna Doležalová | Charles University*

**16:10 – 16:30**    **3D Schrödinger equations with singularities**  
*Nevena Dugandžija | University of Novi Sad*

**16:30 – 16:50**    **The Wolff-Denjoy type theorem for semigroups of nonexpansive mappings**  
*Aleksandra Huczek | Pedagogical University of Krakow*

**16:50 – 17:10**    **Oscillations in Triebel-Lizorkin-Morrey spaces**  
*Markus Weimar | Ruhr University Bochum*

**17:10 – 17:30**    **Characterising mixed Besov spaces with the half-period cosine basis**  
*Kai Lüttgen | TU Chemnitz*

**17:30 – 17:50**    **Microlocal defect distributions related to Hörmander spaces**  
*Ivana Vojnovic | University of Novi Sad*

**17:50 – 18:10**    **Optimal range for the Hilbert transform among fully symmetric spaces**  
*Kanat Tulenov | Institute of Mathematics and Mathematical Modeling, Al-Farabi Kazakh National University*

## **WEDNESDAY, JUNE 1, 2022**

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**9:00–9:50**    **Invited lecture**  
**Weighted inequalities involving Hardy operators, anew results and applications**  
*Amiran Gogatishvili | Institute of Mathematics, CAS*

**10:50–10:50**      **Invited lecture**  
**Gradient flows in metric spaces in applications to solid mechanics**  
*Martin Kružík | Institute of Information Theory and Automation, CAS*

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*10:50–11:20*      *Coffee break*

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**11:20–12:10**      **Invited lecture**  
**Morrey smoothness spaces: A new approach**  
*Dorothee D. Haroske | Friedrich Schiller University*

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*12:10–14:30*      *Lunch break*

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**14:30**              **Sightseeing tour of Prague (walking tour)**

**17:30**              **Conference dinner**

## **THURSDAY, JUNE 2, 2022**

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**9:00–9:50**        **Invited lecture**  
**Multilinear inequalities with singular kernels**  
*Lenka Slavíková | Charles University*

**10:00–10:50**      **Invited lecture**  
**Regularity of paths of the Wiener process and of the Brownian sheet**  
*Jan Vybíral | Czech Technical University in Prague*

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*10:50–11:20*      *Coffee break*

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**11:20–12:10**      **Invited lecture**  
**Morrey smoothness spaces: A new approach**  
*Dorothee D. Haroske | Friedrich Schiller University*

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*12:10–14:20*      *Lunch break*

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- 14:20 – 14:40**    **Hermite-Hadamard type inequalities and Fejer type inequalities with applications**  
*Mihaela Ribičić Penava | University of Osijek*
- 14:40 – 15:00**    **On Hausdorff and quasi-Hausdorff operators**  
*Pankaj Jain | South Asian University*
- 15:00 – 15:20**    **A numerical method for solving first order fuzzy initial value problems**  
*Qamar Dallashi | United Arab Emirates University*
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- 15:20–15:50*    *Coffee break*
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- 15:50 – 16:10**    **The space of Hardy-weights for quasilinear equations: Maz'ya-type characterization and sufficient conditions for existence of minimizers**  
*Ujjal Das | Technion-Israel Institute of Technology, Haifa, Israel*
- 16:10 – 16:30**    **Optimal Gagliardo-Nirenberg interpolation inequality for rearrangement invariant spaces**  
*Filip Soudský | Technical University of Liberec*
- 16:30 – 16:50**    **Inhomogeneous cancellation conditions for local Hardy spaces and applications**  
*Galia Dafni | Concordia University*
- 16:50 – 17:10**    **Faber-Schauder representations for limiting (mixed) Besov spaces and consequences for optimal recovery**  
*Serhii Stasyuk | TU Chemnitz*
- 17:10 – 17:30**    **An efficient numerical method for locating zeros of polynomial systems using multi-resultant**  
*Muhammed Syam | United Arab Emirates University*
- 17:30 – 17:50**    **End-point norm estimates for Hardy operator**  
*Bizuneh Demissie | Karlstad university*
- 17:50 – 18:10**    **Derivations of flow of quantum genetic Lotka-Volterra algebras on  $M_2(\mathbb{C})$**   
*Sondos Syam | United Arab Emirates University*
- 18:10 – 18:30**    **Refinements of some classical inequalities via superquadraticity**  
*Markos Fisseha Yimer | Karlstad University*

# FRIDAY, JUNE 3, 2022

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9:00–9:50

**Invited lecture**

**Multilinear inequalities with singular kernels**

*Lenka Slavíková | Charles University*

10:00–10:50

**Invited lecture**

**Regularity of paths of the Wiener process and of the Brownian sheet**

*Jan Vybíral | Czech Technical University in Prague*

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10:50–11:20

*Coffee break*

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11:20–12:10

**Closing ceremony**