

AIP 2025

Applied
Inverse
Problems

FGV EMAP, Rio de Janeiro
Brazil

Organized and hosted by



SCHOOL OF
APPLIED MATHEMATICS

12^o APPLIED INVERSE PROBLEMS CONFERENCE JULY 28 - AUGUST 01, 2025

Speakers:

- **Tatiana Bubba** (University of Ferrara, Italy)
- **Jun Lai** (Zhejiang University, China)
- **Ru-Yu Lai** (University of Minnesota-Twin Cities, USA)
- **Mikyong Lim** (Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea)
- **Adrian Nachman** (University of Toronto, Canada)
- **Helcio R.B. Orlando** (Federal University of Rio de Janeiro (UFRJ), Brazil)
- **Axel Osses** (Center for Mathematical Modeling (CMM), Chile)
- **Otmar Scherzer** (University of Vienna, Austria)
- **Eva Sincich** (University of Trieste, Italy)
- **Plamen Stefanov** (Purdue University, USA)

Local Committee:

- **Vinicius Albani** (UFSC, Brazil)
- **Liliane Barichello** (UFRGS, Brazil)
- **Adriano DeCezaro** (FURG, Brazil)
- **Alexandre Kawano** (USP, Brazil)
- **Antonio Leitão** (UFSC, Brazil)
- **Majela Machado** (UFBA, Brazil)
- **Fabio Margotti** (UFSC, Brazil)
- **Axel Osses** (Univ. of Chile, Chile)
- **Yuri Saporito (Chair)** (FGV EMAP, Brazil)

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- **Elisa Francini** (Università degli Studi di Firenze, Italy)
- **Thorsten Hohage** (Goettingen Univ., Germany)
- **Alfredo Iusem** (FGV EMAP, Brazil)
- **Barbara Kaltenbacher** (Klagenfurt Univ., AU)
- **Katya Krupchyk** (UCI, USA)
- **Antonio Leitão (Chair)** (UFSC, Brazil)
- **Shuai Lu** (Fudan Univ., China)
- **Carola-Bibiane Schönlieb** (Cambridge Univ., UK)
- **Cristiana Sebu** (Malta Univ., Malta)
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- **Tanja Tarvainen** (Univ. of Eastern Finland, Finland)
- **Gunther Uhlmann** (Univ. of Washington, USA)
- **Jorge Zubelli** (Khalifa Univ., Abu Dhabi)



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Scientific Committee

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Local Committee

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- ◇ Adriano De Cezaro, Federal Univ. of Rio Grande, Brazil
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- ◇ Majela Machado, Federal Univ. of Bahia, Brazil
- ◇ Fabio Margotti, Federal Univ. of St.Catarina, Brazil
- ◇ Axel Osses, Univ. of Chile, Chile
- ◇ Yuri Saporito (**Chair**), Getulio Vargas Foundation, Brazil

Venue

Getulio Vargas Foundation (FGV)

School of Applied Mathematics (EMAp)
Praia de Botafogo 190, 5th Floor
22250-900 Rio de Janeiro, Brazil

Webpage

<https://eventos.fgv.br/aip2025>

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IPIA



IOP Publishing

Program

Monday	Tuesday	Wednesday	Thursday	Friday
Registration 8:00-9:00				IPIA Assembly 8:00-9:00
Opening 9:00-9:50	Calderon Talk 9:00-9:50	Plenary Talk 9:00-9:50	Calderon Talk 9:00-9:50	Parallel Sessions 9:00-11:00
Plenary Talk 9:50-10:40	Plenary Talk 9:50-10:40	Poster Sessions 9:50-11:10	Plenary Talk 9:50-10:40	
Coffee Break 30min	Coffee Break 30min	Extended Coffee Break	Coffee Break 30min	Coffee Break 20min
Plenary Talk 11:10-12:00	Plenary Talk 11:10-12:00	Plenary Talk 11:10-12:00	Plenary Talk 11:10-12:00	Plenary Talk 11:20-12:10
Lunch Break 90min	Lunch Break 90min	Social Events 15:00-18:00 (free afternoon)	Lunch Break 90min	Lunch Break 80min
Parallel Sessions 13:30-15:30	Parallel Sessions 13:30-15:30		Parallel Sessions 13:30-15:30	Parallel Sessions 13:30-15:30
Coffee Break 30min	Coffee Break 30min		Coffee Break 30min	Coffee Break 30min
Parallel Sessions 16:00-18:00	Parallel Sessions 16:00-18:00		Parallel Sessions 16:00-18:00	Parallel Sessions 16:00-18:00
Welcome Icebreaker 18:00-20:00		Conference Dinner 19:00-21:00		

Plenary Talks

All plenary talks and Calderon talks will take place at the Cultural Center and will be streamed to the conference room on the 12th floor of FGV's main building.

Day (Time)	Speaker	Title
Monday (9:50-10:40)	Tatiana Bubba Univ. of Ferrara, Italy	title title title title title title title title title
Monday (11:10-12:00)	Ru-Yu Lai Univ. of Minnesota-Twin Cities, USA	title title title title title title title title title title title title title
Tuesday (9:50-10:40)	Jun Lai Zhejiang Univ., China	title title title title title title title title title title title
Tuesday (11:10-12:00)	Helcio R.B. Orlande Federal Univ. of Rio de Janeiro, Brazil	Inverse Problems in Magnetic Resonance Thermometry
Wednesday (9:00-9:50)	Plamen Stefanov Purdue Univ., USA	title title title title title title title title title
Wednesday (11:10-12:00)	Eva Sincich Univ. of Trieste, Italy	title title title title title title title title title title title
Thursday (9:50-10:40)	Mikyoung Lim Korea Advanced Inst. of Sci. and Technology	title title title title title title title title title
Thursday (11:10-12:00)	Axel Osses Center for Mathematical Modeling, Chile	title title title title title title title title title title title
Friday (11:20-12:10)	Adrian Nachman Univ. of Toronto, Canada	title title title title title title title title title title title

Parallel Sessions – Minisymposia

All rooms are located in FGV's main building. Talks in minisymposia are 25 minutes long, followed by 5 minutes for questions.

Day (Time)	Minisymposium	Part/Total	Room
Monday (13:30-15:30)	MS-27 Levenberg-Marquardt Methods in Inverse Problems: Theory and Applications	1 / 2	306
	MS-03 Data Assimilation for Inverse Problems	1 / 2	307
	MS-09 Inverse Problems in Radiative Transport	1 / 2	308
	MS-19 Convex Optimization Methods for Inverse Problems	1 / 2	317
	MS-15 Breaking Free from Ground Truth: Beyond Supervised Learning in Inv. Probl.	1 / 2	318
	MS-21 Inverse Problems: PDEs and Integral Geometry	1 / 2	408
	MS-23 Imaging with Nonlinear Waves	1 / 2	409
	MS-22 Inverse problems on Riemannian and Lorentzian Manifolds	1 / 3	417
	MS-01 Celebrating Diversity in Inverse Problems	1 / 3	418
	MS-02 Young Researchers in Geometric Inverse Problems and PDEs	1 / 2	537
Monday (16:00-18:00)	MS-20 Inverse Problems in Systems of PDEs and Applications	1 / 1	306
	MS-03 Data Assimilation for Inverse Problems	2 / 2	307
	MS-09 Inverse Problems in Radiative Transport	2 / 2	308
	MS-19 Convex Optimization Methods for Inverse Problems	2 / 2	317
	MS-15 Breaking Free from Ground Truth: Beyond Supervised Learning in Inv. Probl.	2 / 2	318
	MS-21 Inverse Problems: PDEs and Integral Geometry	2 / 2	408
	MS-23 Imaging with Nonlinear Waves	2 / 2	409
	MS-22 Inverse problems on Riemannian and Lorentzian Manifolds	2 / 3	417
	MS-01 Celebrating Diversity in Inverse Problems	2 / 3	418
	MS-02 Young Researchers in Geometric Inverse Problems and PDEs	2 / 2	537

Day (Time)	Minisymposium	Part/Total	Room
Tuesday (13:30-15:30)	MS-12 Level Set Method and Neural Networks for Solving Inverse Problems	1 / 2	306
	MS-06 Imaging Using Coupled Physics	1 / 2	307
	MS-17 Fast Numerical Methods for Forward and Inverse Scattering Problems	1 / 1	308
	MS-25 Recent Trends and Advances in Imaging: Models, Methods and Applications	1 / 3	317
	MS-24 Learned Optimisation Methods for Inverse Problems in Imaging	1 / 2	318
	MS-36 Inverse Problems in Healthcare, Energy, and Industrial Applications	1 / 2	408
	MS-35 Inv. Probl. and Mathematical Models for the Analysis of Astrophysical Data	1 / 2	409
	MS-22 Inverse problems on Riemannian and Lorentzian Manifolds	3 / 3	417
	MS-01 Celebrating Diversity in Inverse Problems	3 / 3	418
	MS-08 New Advances in Data-Driven Numerical Algorithms for Inverse Problems	1 / 1	537
Tuesday (16:00-18:80)	MS-12 Level Set Method and Neural Networks for Solving Inverse Problems	2 / 2	306
	MS-06 Imaging Using Coupled Physics	2 / 2	307
	MS-26 Direct and Inverse Problems Arising in Quantitative Finance	1 / 1	308
	MS-25 Recent Trends and Advances in Imaging: Models, Methods and Applications	2 / 3	317
	MS-24 Learned Optimisation Methods for Inverse Problems in Imaging	2 / 2	318
	MS-36 Inverse Problems in Healthcare, Energy, and Industrial Applications	2 / 2	408
	MS-35 Inv. Probl. and Mathematical Models for the Analysis of Astrophysical Data	2 / 2	409
	MS-10 Recent Advances in Computational Inversion	1 / 3	417
	MS-28 Inverse Problems in Nano-Structures: Advances in Characterization, Modeling and Applications	1 / 1	418
	MS-04 Integral Geometry, Rigidity and Geometric Inverse Problems	1 / 3	537

Day (Time)	Minisymposium	Part/Total	Room
Thursday (13:30-15:30)	MS-18 Variational Regularization Theory and Applications	1 / 2	306
	MS-38 Optimal Experimental Design for Inverse Problems and Related Topics	1 / 2	307
	MS-37 Inv. Probl. and Machine Learning for Digital Health and Proximity Care	1 / 1	308
	MS-25 Recent Trends and Advances in Imaging: Models, Methods and Applications	3 / 3	317
	MS-30 Probabilistic Learning Methods for Inverse Problems	1 / 2	318
	MS-32 On Novel Solution Methods for Inverse Problems	1 / 2	408
	MS-29 Inverse Problems for Evolution Equations	1 / 2	409
	MS-10 Recent Advances in Computational Inversion	2 / 3	417
	MS-31 Inverse Problems for Multiscale Heterogeneous Media	1 / 2	418
	MS-04 Integral Geometry, Rigidity and Geometric Inverse Problems	2 / 3	537
Thursday (16:00-18:80)	MS-18 Variational Regularization Theory and Applications	2 / 2	306
	MS-38 Optimal Experimental Design for Inverse Problems and Related Topics	2 / 2	307
	MS-xx — — — — — — — — — —	x / x	308
	MS-34 Self-Supervised Techniques in Image Reconstruction	1 / 1	317
	MS-30 Probabilistic Learning Methods for Inverse Problems	2 / 2	318
	MS-32 On Novel Solution Methods for Inverse Problems	2 / 2	408
	MS-29 Inverse Problems for Evolution Equations	2 / 2	409
	MS-10 Recent Advances in Computational Inversion	3 / 3	417
	MS-31 Inverse Problems for Multiscale Heterogeneous Media	2 / 2	418
	MS-04 Integral Geometry, Rigidity and Geometric Inverse Problems	3 / 3	537

Day (Time)	Minisymposium	Part/Total	Room
Friday (9:00-11:00)	MS-27 Levenberg-Marquardt Methods in Inverse Problems: Theory and Applications	2 / 2	306
	MS-13 Numerical Linear Algebra Meets Nonsmooth Optimization in Computed Tomography	1 / 2	307
	MS-33 Analysis of Inverse Problems for PDEs	1 / 2	308
	MS-07 Inverse Problems for PDEs: Advances and Applications	1 / 3	408
	MS-16 Inverse Problems and Control Theory with Applications in Biomedicine	1 / 3	409
	MS-11 XAIP: Explainable Algorithms for Inverse Problems	1 / 3	418
	MS-05 Inverse Problems for Linear PDEs	1 / 3	537
Friday (13:30-15:30)	MS-14 Low Dimensional Representations in Complex Imaging Problems	1 / 1	306
	MS-13 Numerical Linear Algebra Meets Nonsmooth Optimization in Computed Tomography	2 / 2	307
	MS-07 Inverse Problems for PDEs: Advances and Applications	2 / 3	408
	MS-16 Inverse Problems and Control Theory with Applications in Biomedicine	2 / 3	409
	MS-11 XAIP: Explainable Algorithms for Inverse Problems	2 / 3	418
	MS-05 Inverse Problems for Linear PDEs	2 / 3	537
Friday (16:00-18:00)	MS-33 Analysis of Inverse Problems for PDEs	2 / 2	308
	MS-07 Inverse Problems for PDEs: Advances and Applications	3 / 3	408
	MS-16 Inverse Problems and Control Theory with Applications in Biomedicine	3 / 3	409
	MS-11 XAIP: Explainable Algorithms for Inverse Problems	3 / 3	418
	MS-05 Inverse Problems for Linear PDEs	3 / 3	537

Parallel Sessions – Invited Minisymposia

MS-39 — Fortieth Anniversary of the Journal Inverse Problems (1985 - 2025)

Inverse Problems (<https://iopscience.iop.org/journal/0266-5611>) is a peer-reviewed, broad-based interdisciplinary journal for pure and applied mathematicians and physicists produced by IOP Publishing. It combines theoretical, experimental and mathematical papers on inverse problems with numerical and practical approaches to their solution. The journal has a specialized relevance to workers in geophysics, optics, radar, communication theory, signal processing, medical imaging, etc.

Day (Time)	Activity	Room
Thursday (12:00-13:30)	Parallel Session	Cultural Center

MS-40 — Women in Inverse Problems Workshop (WiIP) at AIP

The objective of this event is to bring together women in the broad field of Inverse Problems. Both established as well as early career researchers will come together to discuss their recent research achievements. This meeting will facilitate professional networking and create mentoring opportunities for women researchers. The ultimate goal is to help broaden female participation in research careers in particular in the field of Inverse Problems, as well as to create new research collaborations.

Day (Time)	Activity	Room
Tuesday (12:00-13:30)	Women in IP Luncheon	Cultural Center
Tuesday (13:30-15:30)	Parallel Session	Cultural Center
Tuesday (16:00-18:00)	Parallel Session	Cultural Center
Wednesday (9:50-11:10)	Poster session WiIP	Cultural Center