CV by Stefano SERRA CAPIZZANO (September 1st, 2025)

Stefano Serra Capizzano
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Department of Science and High Technology
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stefano.serrac@uninsubria.it,
http://stefano-serra-capizzano.it/
http://scienze-como.uninsubria.it/serra/
(many details on the first 20 years of academic activity in
http://scienze-como.uninsubria.it/serra/curriculum.html).

Date of Birth 2nd August 1967.

Languages: Italian (native), English (proficient), French (good), Spanish (basic).

Degrees

1990: M.Sc. in Computer Science, University of Pisa;
in collaboration with IBM – European Center of Parallel Computing, Roma;
honors Summa Cum Laude;
Advisors: Dario Andrea Bini - University of Pisa, Milvio Capovani - University of Pisa, Giuseppe Radicati di Brozolo – IBM.

1996: Ph.D. in Computational Math. and Oper. Research, University of Milan;
honors Summa Cum Laude;
Advisors: Dario Andrea Bini - University of Pisa, Milvio Capovani - University of Pisa.

Positions held

- **PostDoc Reserach Fellow - CNR and Pisa U.**: 1991–1995:
- **Temporary Professor of Calculus (University of Calabria and University of Siena)**: 1995–1996 and 1999;

- **Assistant Professor of Numerical Analysis (University of Florence)**: 1996-2000;
- **Associate Professor of Numerical Analysis (University of Insubria)**: 2000-2006;
- **Habilitation as Full Professor in Numerical Analysis**: November 2004;
- **Full Professor in Numerical Analysis**: 2006-present;
- **Head of the Department of Physics and Mathematics**: from October 1st 2006 to September 30th 2009 and from October 1st 2009 to July 31st 2011.
- **Proponent and first President of the PhD Program of Como - Insubria (Mathematics of Computation: Models, Structures, Algorithms, and Applications)**: from June 2007 (for eight years).
- **Member of the Senate at the Insubria University as representative of the Heads of Department**: from October 1st 2007 to May 26th 2008.
- **Dean of the Faculty of Sciences - Como, U. Insubria and Member of the Senate at the Insubria University as Dean of Faculty**: from May 27th 2008 till September 30th 2011 (the Faculty has been replaced by the Department of Science and High Technology).
- **Head and founder of the Department of Science and High Technology and Member of the Senate at the Insubria University as Head of Department**: from August 1st 2011 to October 1st 2017.
- **Member of the Scientific Board of GNCS-INDAM** (Group of Scientific Computing at National Institute for High Mathematics): 2013 - 2021.
- **Wallenberg Visiting Professor (part-time)**, Dept. Information Technology, Uppsala University: 2014–2015. https://kaw.wallenberg.org/en/better-tools-computer-simulations.
- **Long Term Visiting Professor at the Department of Information Technology, Uppsala University - Uppsala (Sweden)**: 2016 - present.
- **He was one of the members of the Ministry Committee of the National Habilitation 2017 (ASN 2017 'in esecuzione di provvedimenti giurisdizionali' for ASN 2016-18)**: 2017.
- **Rector for the Como branch of Insubria – Deputy Rector of Insubria, President of the Insubria Center on Science and Cultural Heritage, and member of the Senate and CdA of Insubria University**: November 1st 2018 - 2024. (Delegate for Research, Insubria University, till 2020; Delegate for Strategic Planning, Insubria University, till 2020).
- **Winner of the Prodi Chair in Nonlinear Analysis for one year, Department of Mathematics, Wurzburg University - Wurzburg (Germany)**: April–July 2019 (delayed and then withdrawn due to other duties).

- **He is one of the members of the Ministry Committee of the National Habilitation 2023-25 (ASN 2023-25)**: 2023–2025.
- **He is one of the members of the Ministry Committee of the National Habilitation 2024 (ASN 2024 'in esecuzione di provvedimenti giurisdizionali' for ASN 2021-23)**: 2024.

Teaching activity: Approximation Methods at Insubria of 8 CFU; the other courses in Italy of 6 CFU
Year 1995-96: *Calculus* (in Italian), Science Faculty (University of Calabria – Arcavacata di Rende (Italy)), *Approximation Theory* (in Italian), Science Faculty (University of Florence).

Year 1996-97: *System Theory*, *Mathematical Methods for Biology* (in Italian), Science Faculty (University of Florence).

Years 1997-98 and 1998-99: *Mathematical Methods for Biology*, *Algorithms and Data Structures II* (in Italian), Science Faculty (University of Florence).

Year 1999-2000: *Mathematical Methods for Biology*, *Numerical methods for Signals and Images* (in Italian), Science Faculty (University of Florence), *Numerical methods and Programming* (in Italian), Engineering Faculty (University of Siena).

Years 2000-01 and 2001-02: *Numerical Analysis I*, *Numerical Analysis II* (in Italian), Science Faculty (University of Insubria - Como).

Years 2002-03 and 2003-2004: *Numerical Analysis I*, *Numerical Analysis II*, *Numerical Analysis III* (in Italian), Science Faculty (University of Insubria - Como).

Year 2004-05: *Numerical Analysis I*, *Numerical Analysis II*, *Approximation Theory I*, *Approximation Theory II* (in Italian), Science Faculty (University of Insubria - Como).

Years 2003-2004 and 2004-05: *Numerical Linear Algebra* for graduate students (Master and PhD School FMB Uppsala University (Sweden), PhD School in Applied Mathematics, Milan University, PhD School in Mathematics, Genova University), in English).

Year 2005-06: *Approximation Theory I*, *Approximation Theory II* (in Italian), Science Faculty (University of Insubria - Como); *Numerical Linear Algebra* for graduate students (Master and PhD School FMB Uppsala University (Sweden)), in English).

Year 2006-07: *Numerical Analysis II*, *Approximation Theory I*, *Approximation The-*

ory II, *Mathematical Methods in Computer Sciences* (in Italian), Science Faculty (University of Insubria - Como); *Numerical Linear Algebra* for graduate students (Master and PhD School FMB Uppsala University (Sweden), in English); *Numerical Analysis* for graduate students (Summer School - Scuola Matematica InterUniversitaria - Perugia, in English).

Year 2007-08: *Numerical Analysis II*, *Approximation Theory I*, *Approximation Theory II*, *Mathematical Methods in Computer Sciences* (in Italian), Science Faculty (University of Insubria - Como); *Distribution of eigenvalues for matrix-sequences: all started with Szegö* for graduate students (PhD School Dept. Mathematics Bordeaux I University (France), in English/French).

Year 2008-09: *Numerical Analysis II*, *Approximation Theory I*, *Approximation Theory II* (in Italian), Science Faculty (University of Insubria - Como).

Year 2009-10: *Numerical Analysis III*, *Mathematical Methods in Computer Sciences* (in Italian), Science Faculty (University of Insubria - Como); *Numerical Linear Algebra* for graduate students (Master and PhD School FMB Uppsala University (Sweden), in English); *FFT, Matrix Approximation, Preconditioning, and Spectral Theory* for graduate students (PhD School on 'Trends and Developments in Linear Algebra' - Abdus Salam ICTP - Trieste, in English); *Matrix Approximation and Spectral Theory* for graduate students (PhD School Rome - La Sapienza, in Italian).

Year 2010-11: *Numerical Analysis III*, *Mathematical Methods in Computer Sciences* (in Italian), Science Faculty (University of Insubria - Como); *Numerical Linear Algebra* and *Approximation Theory* for graduate students and Faculty Members (Erudite Program - Kerala State (India), Cochin U. of Science and Technology CUSAT, in English).

Year 2011-12: *Numerical Analysis II*, *Numerical Methods for PDEs* (in Italian), Department of Science and High Technology (University of Insubria - Como); *Numerical Linear Algebra* for graduate students (Master and PhD School FMB Uppsala University (Sweden), in English).

Year 2012-13: *Numerical Analysis*, *Approximation Theory I*, *Modeling for Environmental Engineering* (in Italian), Department of Science and High Technology (University of Insubria - Como).

Year 2013-14: *Numerical Analysis*, *Approximation Theory II* (in Italian), Department of Science and High Technology (University of Insubria - Como); *Numerical Linear Algebra* for graduate students (Master and PhD School FMB Uppsala University (Sweden), in English).

Year 2014-15: *Approximation Theory I*, *Numerical Analysis* (in Italian), Department of Science and High Technology (University of Insubria - Como).

Year 2015-16: *Applied mathematics* (in English), *Numerical analysis* (in Italian), Department of Science and High Technology (University of Insubria - Como).

Year 2016-17: *Numerical Analysis*, *Approximation Theory I* (in Italian), Department of Science and High Technology (University of Insubria - Como), *Fast Methods* (in English), Faculty of Informatics (USI - Lugano (Switzerland).

Year 2017-18: *Numerical Analysis*, *Computational mathematics* , (in Italian) *Approximation Theory I* (in English), Department of Science and High Technology (University of Insubria - Como), *Fast Methods* (in English), Faculty of Informatics (USI - Lugano (Switzerland).

Year 2018-19: *Numerical Analysis*, *Computational mathematics* (in Italian), *Approximation Theory II* (in English), Department of Science and High Technology (University of Insubria - Como), *Fast Methods* (in English), Faculty of Informatics (USI - Lugano (Switzerland) and PhD School Uppsala University (Sweden).

Year 2019-20: *Numerical Analysis*, *Computational mathematics* (in Italian), *Approximation Theory I* (in English), Department of Science and High Technology (University of Insubria - Como), *Algebra and Geometry* (in Italian), Department of Theoretical and Applied Sciences (University of Insubria - Como).

Year 2020-21: *Numerical Analysis* (in Italian), Department of Science and High Technology (University of Insubria - Como), *Numerical Analysis* for graduate students (Summer School - Scuola Matematica InterUniversitaria - Perugia, in English).

Year 2021-22: *Numerical Analysis* (in Italian), *Approximation Theory II* (in English), Department of Science and High Technology (University of Insubria - Como).

Year 2022-23: *Numerical Analysis* (in Italian), *Approximation Theory I* (in English), Department of Science and High Technology (University of Insubria - Como).

Year 2023-24: *Numerical Analysis* (in Italian), *Approximation Theory II* (in English), Department of Science and High Technology (University of Insubria - Como).

The teaching in the years 2001-06 and 2019-2022 has been provided in blended mode, ranging from pure online, to mixed forms, and concerning also exercises, intermediate evaluations, and exams.

In the month of September 2004, 2006, and 2007 has given lectures in Numerical Linear Algebra (Preconditioning and Spectral Theory for approximated PDEs matrix-sequences) for the PhD "International Summer School on Numerical Linear Algebra and its Applications" Porto Giardino (BA) organized by N. Mastronardi For the Master and PhD School FMB Uppsala he was evaluated by the students as

the most appreciated lecturer in all the editions. He was advisor of several Master and PhD theses. He has been involved in several evaluation committees for the final PhD exam in Italy (Padua, as president, Catania, as president), France (Bordeaux I, as president), Sweden (Uppsala, as member).

He was one of the scientists involved in the project "I giorni della Scienza" organized by Fondazione Veronesi (2009-10) with noble laureates and scientists as Renato Dulbecco, Margherita Hack, Rita Levi Montalcini, Renzo Piano. He was one of the philosophers for the project "Abitatori del Tempo" organized by Provincia Monza-Brianza (2011-12) with scientists and philosophers as Edoardo Boncinelli, Giulio Giorello, Giuseppe Rizzardi, Emanuele Severino, Carlo Sini.

PhD students

1. Paris Vassalos (PhD 2003, Ioannina U. - Greece): Full Professor (permanent position) at Athens University of Economics and Business;
2. Marco Donatelli (PhD 2006, Milano U. - Italy): Full Professor (permanent position) in Como, U. of Insubria;
3. Antonio Aricó (PhD 2006, Pavia U. - Italy): Assistant Professor (permanent position) in Naples, third U. of Naples; then Teacher at secondary school;
4. Antonio Cicone (PhD 2010, L'Aquila U. - Italy): Associate Professor (permanent position), U. of L'Aquila, with habilitation as Full Professor (ASN year 2023);
5. Eric Ngondiep (PhD 2011, Insubria U. - Italy): Associate Professor Ibn Saud Islamic U. - Ryad, Saudi Arabia;
6. Debora Sesana (PhD 2011, Insubria U. - Italy): Teacher at secondary school, with habilitation as Associate Professor (ASN year 2017);
7. Stefano Hajek (PhD 2013, Insubria U. - Italy): Resp. Risk Models (Milano), Unipol Insurances;
8. Malbor Asllani (PhD 2015, Insubria U. - Italy): Assistant Professor (nonpermanent position) at Florida State U.;
9. Carlo Garoni (PhD 2015, Insubria U. - Italy): Associate Professor (permanent position) at U. Tor Vergata - Rome, with habilitation as Full Professor (ASN year 2025);
10. Malik Zaka Ullah (PhD 2015, Insubria U. - Italy): Associate Professor at King Abdulaziz U., Jeddah, Saudi Arabia;
11. Mariarosa Mazza (PhD 2016, Insubria U. - Italy): Assistant Professor (tenure track position) at U. Tor Vergata - Rome, with habilitation as Associate Professor (ASN year 2020) and as Full Professor (ASN year 2023);

12. Fabio Durastante (PhD 2017, Insubria U. - Italy): Assistant Professor (tenure track position) at Pisa U., with habilitation as Associate Professor (ASN year 2023);
13. Sven-Erik Ekstrom (PhD 2018, Uppsala U. - Sweden): Assistant Professor (tenure track position) at Uppsala U., Sweden;
14. Fayyaz Ahmad (PhD 2018, Insubria U. - Italy): Assistant Professor (permanent position) at National Textile U., Faisalabad, Pakistan;
15. Isabella Furci (PhD 2018, Insubria U. - Italy): Assistant Professor (nonpermanent position) at Genova U., with habilitation as Associate Professor (ASN year 2025);
16. Giovanni Barbarino (PhD 2020 - Tesi di Perfezionamento, Scuola Normale Superiore - Italy): PostDoc at Mons U., Belgium, with habilitation as Associate Professor (ASN year 2024);
17. Barbara Fagiolini (PhD 2020, Insubria U. - Italy): Teacher at secondary school
18. Paola Ferrari (PhD 2020, Insubria U. - Italy): Research Associate at Wuppertal U., Germany and Assistant Professor (nonpermanent position) at Genova U.;
19. Rafael Diaz Fuentes (PhD 2021, Insubria U. - Italy): Assistant Professor (nonpermanent position) at Cagliari U.;
20. Nikos Barakitis (PhD 2022, Athens University of Economics and Business - Greece): Information Technology work;
21. Ryma Imene Rahla (PhD 2022, Université Tunis-El Manar - Polytech. School - Tunisia): Assistant Professor (nonpermanent position) at Algers U., Algers, Algeria;
22. Andrea Adriani (PhD 2022, Insubria U. - Italy): Assistant Professor (permanent position) at UM6P, Rabat, Morocco;
23. Rosita Sormani (PhD 2025, Insubria U. - Italy): PostDoc at Cagliari U.

Other PhD students in Italy and abroad
Ilyass Boullouz (Vanguard UM6P - Rabat - Morocco)
Samuele Ferri (Insubria U. - Italy)
Asim Ilyas (Insubria U. - Italy)
Muhammad Faisal Khan (Insubria U. - Italy)
Ayoub Lailoune (Vanguard UM6P - Rabat - Morocco)
Congcong Li (HK Baptist U. - Hong Kong - China)
Valerio Loi (Insubria U. - Italy)
David Meadon (Uppsala U. - Sweden)
N.S. Sarathkumar (Cochin U. - India)
Giacomo Tento (Insubria U. - Italy)

Further mentoring activity
He supervised more than 50 among Bachelor and Master Theses mainly in Mathematics and Computer Science and he was scientific responsible of more than 20 PostDoc projects of Junior and Senior type.

Further managing activity

1. He was in the Selection Committee of Researchers, Associate and Full Professors in Italy (Bologna U., Firenze U., Genova U., Insubria U., Pisa U., Roma Tor Vergata U., Torino Polytechnical U. etc) and abroad (Bahrain, Greece, Morocco, Portugal, Saudi Arabia, Switzerland) for more than 20 times.
2. He was one of the members of the Ministry Committee of the National Habilitation 2017 (ASN 2017 'in esecuzione di provvedimenti giurisdizionali' for ASN 2016-18).
3. He is one of the members of the Ministry Committee of the National Habilitation 2023 (ASN 2023-25 for the years 2023-2025).
4. He is one of the members of the Ministry Committee of the National Habilitation 2024 (ASN 2024 'in esecuzione di provvedimenti giurisdizionali' for ASN 2021-23).

Visiting activity
June 1998: Chinese University of Hong Kong (R. Chan);
January 2001: Indian Statistical Institute of New Delhi (R. Bhatia);
February 2001: Chinese University of Hong Kong (R. Chan).
February 2002: USTL of Lille (B. Beckermann).
June 2002: Chinese University of Hong Kong (R. Chan).
July 2002: Institute of Numerical Analysis - Russian Academy of Sciences Moscow (E. Tyrtyshnikov).
January 2003: University of Ioannina (D. Noutsos).
February 2003: SCCM center - Stanford University (G. Golub).
December 2003: Institute of Mathematical Sciences - National University of Singapore (L. Shen).
February 2004: Uppsala University (S. Holmgren).
May 2004: Ljubljana University (M. Hladnik).
November 2004: University of Ioannina (D. Noutsos).
March–May 2005: Uppsala University (S. Holmgren).
December 2005: University of Ioannina (D. Noutsos).
February 2006: Lab. LAPS - Bordeaux University (M. Najim).
March 2006: Uppsala University (S. Holmgren and M. Neytcheva).
February – June 2007: Bordeaux University (E. Strouse).

November – December 2007: Uppsala University (M. Neytcheva) and Linköping University (L. Eldén).
May–July 2008: Bordeaux University (E. Strouse).
November 2009: Uppsala University (M. Neytcheva).
March 2010: Athens University of Economics and Business (P. Vassalos).
February 2011: CUSAT - Cochin (N. Namboodiri) - ERUDITE PROGRAM.
November 2011: Uppsala University (M. Neytcheva).
October 2013: Xiamen University - China (Z.J. Bai).
February 2014: Athens University of Economics and Business (P. Vassalos).
April 2014: Uppsala University (M. Neytcheva).
June 2014: TUM - Munich (T. Huckle).
October-November 2014, January 2015, May 2015: Uppsala University - Donation KAW 2013.0341 from the Knut & Alice Wallenberg Foundation, in collaboration with the Royal Swedish Academy of Sciences, supporting Swedish research in mathematics: https://kaw.wallenberg.org/en/better-tools-computer-simulations.
February 2015: Austin U - Austin (T. Hughes).
December 2015: IIP - Max Planck Munich (E. Franck and A. Ratnani).
February 2016: Universidad Autónoma de Madrid (E. Zuazua).
November 2017: Uppsala University (M. Neytcheva) and Lund University (P. Birken).
November 2018: Uppsala University (M. Neytcheva).
March 2019: Puerto Rico University (F.M. Ciconte).
April 2019: Puerto Rico University (F.M. Ciconte).
January and October 2020: Uppsala University (M. Neytcheva).
November 2021: Athens University of Economics and Business (P. Vassalos).
May 2022: Athens University of Economics and Business (P. Vassalos).
December 2022: Uppsala University (S.-E. Ekström and M. Neytcheva).
February 2023: University of Ioannina (D. Noutsos).
March 2023: Centro de Investigación y de Estudios Avanzados IPN - Mexico City (S. Grudsky).
October 2023: Uppsala University (S.-E. Ekström and G. Kreiss) and SIMULA - Oslo (M.E. Rognes and P. Benedusi).
April 2024: Athens University of Economics and Business (P. Vassalos).
November 2024: RUR University - Bochum (I. Dravins).
January 2025: Athens University of Economics and Business (P. Vassalos).
February 2025: KAUST - Jeddah (R. Krause).

Referee activity
Kluwer Academic Publisher (for 2 books).
He served as referee for several national (Italian) and International Research Projects.
He is among the referees for the (Italian) National System for Research Evaluation (VTR) under indication of the Panel (CIVR) for the years 2001-2003 and for the

years 2004-2010 (ANVUR).
He served as referee for Calcolo, SIAM Journal on Scientific Computing, SIAM Journal on Matrix Analysis, Bit, Journal of Computational and Applied Mathematics, Numerical Algorithms, Linear Algebra and its applications, Theoretical Computer Science, Contemporary Mathematics, Electronic Transactions on Numerical Analysis, Electronic Linear Algebra and its applications, Applied Numerical Mathematics, Mathematics of Computation, IEEE on Signal Processing, Numerische Mathematik, Acta Scientiarium Mathematicarum, Numerical Linear Algebra with Applications, Journal of Analysis and Applications, Internet Mathematics, IEEE Signal Processing Letters, SIAM Journal on Numerical Analysis, Inverse Problems, Entropy, Journal of Integral Equations and Applications, Quantitative Finance, etc.

Research interest
Numerical Linear Algebra, (Structured) Matrix Theory, Asymptotic Linear Algebra, Approximation Theory, Positive Operators, Spectral Theory and Numerical Algorithms for linear systems coming from PDEs, Image Restoration and Signal Processing (Inverse Problems), Web Searching Algorithms and Ranking Models (GOOGLE etc), Wireless Communications. Starting from the expertise in Numerical Linear Algebra (see the lest of publication), one of the main focus is to create bridges among different areas of computational mathematics and applied sciences. Mention has to be made to the papers [63,78,82,87,99,103,102, 97, 110, 90, 88, 128, 130, 133, 142, 149, 154, 161, 175, 194, 196] evaluated as excellent by the Ministry National evaluation of research by the panels CIVR 01-03, VTR 04-08, VQR 11-14, VQR 15-19 (http://vtr2006.cineca.it/php4/vtr-aree.php) and ANVUR, for ranking GNCS-INDAM (National Institute of High Mathematics), University of Insubria, and the universities of the coworkers.

Editor activity
Editor of "Numerical Algorithms" (2007 – 2011);
Editor of "Bollettino UMI: nuova serie" (2008 – 2013);
Associate Editor of "Le Matematiche" (2009 – 2012;
Guest Editior of "J. Comput. Appl. Math." – Special Issue on Algorithms for the WEB, 2010;
Guest Editor of "Appl. Numer. Math." and "Computing and Visualization in Science" – Special Issue on NETNA conference 2015;
Editor of "Applied Mathematics and Computation" (2016 – 2019);
Editor of "Numerical Linear Algebra with Applications" (2023 – present).

Attending and Organization of Conferences
He attended to more than 200 international conferences and more than 30 times as

invited speaker.
He was part of the of Program and Scientific Committee of the *Second Workshop on Numerical Analysis and Applications* (Rousse (Bulgaria), June 11–15, 2000) where he organized (with G. Heinig) a symposium on "Recent Advances on Structured Matrices and Applications".
He organized (with D. Bini) the special session on "Structured Matrices in Imaging" for the conference *Applied Inverse Problems: Theoretical and Computational Aspects* (Montecatini (Italy), June 18–22, 2001).
Co-Chair of the conference *SPIE: Advanced Signal Processing Algorithms, Architectures and Implementations XIII* (S. Diego - California (USA), August 3–8, 2003) in which he organized a session with the title "Structured Matrices in Signal Processing/Imaging".
Member of the International Program Committee for the conference *Structured numerical linear algebra problems: algorithms and applications* (Cortona (Italy), September 19–24, 2004 and September 15–19, 2008).
Member of the Organizing Committee for the conference *International Conference on Matrix Methods and Operator Equations* (Moscow (Russia), June 20–25, 2005 and July 23–28, 2007).
Member of the Organizing Committee for the conference *Algorithms in the WEB* (Monopoli (Italy), September 9–15, 2007).
From June 22nd to July 10th 2009 he has directed the Summer School and Advanced Workshop on Trends and Developments in Linear Algebra at Abdus Salam International Center of Theoretical Physics (ICTP) in Trieste.
He organized (with M. Donatelli), a symposium on "Asymptotic Linear Algebra, Numerical Methods, and Applications", for the "ENUMATH 2009" (Uppsala (Sweden), June 29 – July 3, 2009).
Among the most recent conferences, he was in the Organizing Committee of the Householder Meeting XXI, Porto Giardino (Italy), June 12th–17th 2022, of the International Multigrid Conference 2022, Lugano (Switzerland), August 22nd–26th 2022, in the Scientific Committee of the Conference ALAMA - Matrix Theory and Computation, Alcalà (Spain), June 1st–3rd 2022, Mathematics for Signal processing and Applications in Geophysics and other fields, Rome (Italy), March 1st–3rd 2023.

Organization of Scientific Projects

- He is one of the member committee for the E-Learning project of the University of Insubria and has served as head of the Mathematicians of the Science Faculty of Como (University of Insubria) in the period 2001-2006.
- He has been involved in several national PRIN projects (PRIN = Projects of Relevant National Interest); for the PRIN 04, 06, 08 he was PI of the scientific unit in Como, with an average amount of 40k euros for each project;

- He partecipated to various other national and international scientific projects on Structured Numerical Linear Algebra, Applied mathematics, Numerical Linear Algebra, and Scientific Computing: among them he was PI of a GNCS - INDAM (National Institute on Mathematics) project on *Preconditioning for indefinite and non symmetric systems arising in certain differential and integral equations*, of a MURST (Ministry of University and Research) - "Rientro Cervelli" project on *Multigrid and Wavelets algorithms for image restoration problems* with M. Tasche (Rostock), including the grant for three years full professor position (around 400k euros), and of other Projects with R. Bhatia (Delhi - India), R. Chan (Hong Kong - China), Namboodiri (Cochin - India), D. Noutsos (Ioannina - Greece), etc.
- He was the PI of a Wallenberg part-time full professor position for two years (2013-2014) in Uppsala for a project on Geoscience in the framework of the Swedish project "Becoming Number One" (around 200k euros): https://kaw.wallenberg.org/en/better-tools-computer-simulations.
- He is part of the Seminar Board of the *International Seminar on Matrix Methods and Operator Equations* (see www.matrices\\narod.ru) headed by E. Tyrtyshnikov (Academy of Sciences of Moscow).
- He was in the Board of the PhD Program of Milano (Computational Mathematics) from 2002 to 2007 and of Como - Insubria (Computational Physics) from 2004 to 2007.
- From 2007 to 2015, he was the President of the PhD Program of Como - Insubria (Mathematics of Computation: Models, Structures, Algorithms, and Applications). From 2007 to 2015, every year, he obtained an additional PhD position for three years from the Ministry of University and Research: the total grants amounts to 500k.
- From 2016 to present, he is is the board of the PhD Program - Insubria (Computer Science and Computational Mathematics).
- He promoted a joint project between Insubria University and Fondazione Volta (representing the local territory in Como) for two positions of faculty researchers in the years 2020-2023, one in Green Chemistry, the other in Mathematical Analysis and Modelling for the Cultural Heritage (for a total amount of 300k euros).
- From the year 2023, he is supported by the European High-Performance Computing Joint Undertaking (JU) under grant agreement No 955701. The JU receives support from the European Union's Horizon 2020 research and innovation programme and Belgium, France, Germany, Switzerland (total amount of more than 3000k euros).

List of main publications of Stefano Serra Capizzano

Books/Monographs

1. "Sequences of Structured Matrices: Tools and Applications", **LAP LAMBERT Academic Publishing** (2012), ISBN-10: 3659162426, ISBN-13: 978-3659162428.
   With D. Sesana.

2. "Generalized Locally Toeplitz sequences: theory and applications - Vol I", **SPRINGER - Springer Monographs in Mathematics** (2017), ISBN: 978-3-319-53678-1:
   http://www.springer.com/gp/book/9783319536781
   With C. Garoni. Preliminary version in Technical Report, N. 16, May 2015, Department of Information Technology, Uppsala University.

3. "Generalized Locally Toeplitz Sequences: A Spectral Analysis Tool for Discretized Differential Equations", **Notes for the CIME course** "GLT matrices and spectral symbol: a mathematical environment for spectral analysis and fast solvers for linear systems arising from the discretization of integro/differential problems", in *Summer School on Splines and PDEs: Recent Advances from Approximation Theory to Structured Numerical Linear Algebra*, Cetraro 3–7 July 2017, **SPRINGER - Lecture Notes in Mathematics, CIME Foundation Subseries,** Vol. 2219 (2018), pp. 161–236.; with C. Garoni.
   A further version titled "Generalized Locally Toeplitz Sequences: A Spectral Analysis Tool for Approximated Differential Equations and Few Selected Examples" as **XVI BSCG Notes** for the *Winter School - XVI Brazilian School of Cosmology and Gravitation*, Rio de Janeiro, 10–21 July 2017: With F. Durastante, C. Garoni, M. Mazza.

4. "Generalized Locally Toeplitz sequences: theory and applications - Vol II", **SPRINGER - Springer Monographs in Mathematics** (2018). ISBN: 978-3-030-02232-7:
   https://www.springer.com/us/book/9783030022327
   With C. Garoni. Preliminary version in Technical Report, N. 2, February 2017, Department of Information Technology, Uppsala University.

5. "The Theory of Block Generalized Locally Toeplitz Sequences - Vol III", Technical Report, N. 1, January 2018, Department of Information Technology, Uppsala University,
   http://www.it.uu.se/research/publications/reports/2018-001/ With C. Garoni, D. Sesana.

6. "Block Generalized Locally Toeplitz Sequences: Theory and Applications in the Unidimensional Case", Technical Report, N. 4, July 2019, Department of Information Technology, Uppsala University,

http://www.it.uu.se/research/publications/reports/2019-004/ With G. Barbarino, C. Garoni.

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    - Advisor3: Dr. Giuseppe Radicati di Brozolo, (I.B.M. - E.C.S.E.C. Roma);
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    - Advisor1: Prof. Dario Bini, (Dipartimento di Matematica - Università degli Studi di Pisa);
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311. "Two-dimensional semi-linear Riesz space fractional diffusion equations in convex domains: GLT spectral analysis and multigrid solvers", Proc. *14-th International Conference on "Large-Scale Scientific Computations" - Session in Memory of Prof. Owe Axelsson*, (Sozopol (Bulgaria) June 5th–9th, 2023), LNCS,volume 13952, pp 52—60; 24 May 2024. With R. Sormani, C. Tablino Possio.

312. "An extradimensional approach for distributional results: the case of 2×2 block Toeplitz structures", *Proc. Mathematical Modeling with Modern Applications M3A24*, **Springer Proceedings on Mathematics and Statistics** - Vol. 497 (2025), pp. 61–78; online 9-7-25;
https://doi.org/10.1007/978-3-031-89041-3.
With N. Barakitis, P. Ferrari, I. Furci.

313. "A note on eigenvalues and singular values of variable Toeplitz matrices and matrix-sequences with application to variable two-step BDF approximations

to parabolic equations", *Proc. International Conference on "Spectral and Approximation Theory"*, (Kochin - Kerala - (India) November 27th–30th, 2023), **Springer book series "Trends in Mathematics"**, pp. 37–67; online 27-7-25;
https://link.springer.com/book/10.1007/978-3-031-90240-6.
With N. Barakitis, V. Loi.

Papers for National Conferences

314. "Matrici strutturate, proprietà spettrali, precondizionamento nei metodi di gradiente coniugato, algoritmi paralleli in algebra lineare numerica", Proceedings of *Convegno Nazionale di Analisi Numerica* (Montecatini (Pt) April 27–29, 1994).

315. "Asymptotic expansions and extrapolation for positive linear operators", Proceedings of *Convegno "Analisi Numerica: metodi, software matematico"* (Ferrara January 19–21 2000) (**Annali dell'Università di Ferrara**, Sez. VII Sc. Mat., Suppl. al Vol. XLV (2000), pp. 431–442). With F. Costabile, M.I. Gualtieri.

Talks at International Conferences

316. "Preconditioning strategies for Hermitian Toeplitz systems with nondefinite generating functions", for the annual *SIAM Conference* (San Diego - California (USA) July 25th–29th 1994).

317. "Preconditioners for (high order) Elliptic problems", for the *Second IMACS International Symposium on Iterative Methods in Linear Algebra* (Blagoevgrad (Bulgaria) June 17th–20th 1995). With G. Fiorentino (speaker).

318. "Conditioning and solution, by means of preconditioned conjugate gradient methods of Hermitian (block) Toeplitz linear systems", for the Conference *SPIE - Session: Advanced Signal Processing Algorithms, Architectures and Implementations VI* (San Diego - California (USA) July 9th–14th 1995), **invitation by Prof. R.H. Chan - Chinese University of Hong Kong (China)**.

319. "On the Conditioning and the solution, by means of multigrid methods, of symmetric (block) Toeplitz linear systems", for the *Fourth International Colloquium on Numerical Analysis* (Plovdiv (Bulgaria) August 13th–17th 1995), **invitation by Prof. D. Bainov - University of Sofia (Bulgaria)**.

320. "A τ algebra based multiiterative solver for (block) Toeplitz systems", for the Conference *Algebraic Multilevel Iteration Methods with Applications* (Nijmegen (The Netherlands) June 13th–15th 1996). With G. Fiorentino (speaker).

321. "The effectiveness of the band-Toeplitz preconditioning: a survey", for the *First Workshop on Numerical Analysis and Applications: symposium on "Computation in Image Reconstruction and Restoration"* (Rousse (Bulgaria) June 21st–24th 1996), **invitation by Prof. J. Nagy - Southern Methodist University - Dallas - Texas (USA) and by Prof. R. Plemmons - Wake Forest University - Winston-Salem - North Carolina (USA)**.

322. "Some considerations about the qualitative behaviour of the solutions of a class of proportional integral controlled dynamical systems", for the *Second Worldwide Congress on Nonlinear Analysis: session of Qualitative Theory of Differential Equations* (Athens (Greece) July 10th–17th 1996), **invitation by Prof. V. Gaiko - University of Minsk (Belarus)**.

323. "Asymptotic expansions for a class of preconditioned matrices related to some 1D and 2D boundary value problems", for the *Seventh International Congress on Computational and Applied Mathematics* (Louvain (Belgium) July 21st–26th 1996), **invitation by Prof. L. Wuytack - University of Louvain (Belgium)**.

324. "The use of the approximation theory in devising fast and superlinear preconditioners for ill-conditioned Toeplitz systems", for the *Workshop on Numerical Methods for Structured Matrices in Filtering and Control* (S. Barbara - California (USA) August 1st–3rd 1996).

325. "Asymptotic expansions for some classical operators and their use in approximation theory", for the *Fifth International Colloquium on Numerical Analysis* (Plovdiv (Bulgaria) August 13th–17th 1996), **invitation by Prof. D. Bainov - University of Sofia (Bulgaria)**. With F. Costabile and M.I. Gualtieri.

326. "Analysis of a degenerate Hopf bifurcation in a PI controlled CSTR", for the *Seventh International Colloquium on Differential Equations* (Plovdiv (Bulgaria) August 18th–23rd 1996), **invitation by Prof. D. Bainov - University of Sofia (Bulgaria)**. With C. Tablino Possio (speaker).

327. "A practical algorithm to design fast and optimal Toeplitz preconditioners for Hermitian Toeplitz systems", for the *Workshop on Toeplitz matrices* (Cortona (Italy) September 9th–12th 1996).

328. "Multigrid methods for indefinite Toeplitz systems", for the *Workshop on Toeplitz matrices* (Cortona (Italy) September 9th–12th 1996). With G. Fiorentino (speaker).

329. "An extrapolation technique for general exponential-type operators", for the *Third International Conference on Functional Analysis and Approximation*

Theory (Acquafredda di Maratea (Italy) September 23rd–28th 1996). With F. Costabile and M.I. Gualtieri (speaker).

330. "Some unifying results on preconditioning in a matrix algebra", for the Conference in (331). This communication is presented by F. Di Benedetto, in a more detailed form, in the Conferences in (332) and (334). With F. Di Benedetto (speaker).

331. "A Weierstrass-Korovkin Matrix theory for the approximation of Toeplitz matrices via Banach matrix algebras", for the *SIAM meeting* (Stanford - California (USA) July 14th–18th 1997), **invitation by Prof. X.Q. Jin - University of Macao (Portugal)**.

332. "Linear approximation operators and superlinear PCG techniques for Toeplitz systems", for the *ILAS workshop on "Fast Algorithms in Control, Signal and Image Processing"* (Winnipeg (Canada) June 6th–8th 1997), **invitation by Prof. J. Nagy - Southern Methodist University - Dallas - Texas (USA)**.

333. "Structured preconditioners for (semi) elliptic boundary value problems", for the *Sixth International Colloquium on Numerical Analysis* (Plovdiv (Bulgaria) August 13th–17th 1997), **invitation by Prof. D. Bainov - University of Sofia (Bulgaria)**. With G. Fiorentino (speaker).

334. "The approximation of Toeplitz matrices by a Weierstrass-Korovkin theorem", for the *International Algebraic Conference dedicated to the Memory of Prof. Dmtrii Fadeev* (Saint Petersburg (Russia) June 24th–30th 1997), **invitation by Prof. V.P. Il'in and by Prof. E. Tyrtyshnikov - Russian Academy of Sciences of Moscow (Russia)**.

335. "How bad can be positive definite Toeplitz matrices", for the Conference *Fourier Analysis and Applications* (Kuwait City (Kuwait) May 3rd–6th 1998), **invitation by Prof. F. Al-Musallam and by Prof. G. Heinig - Kuwait University - Kuwait City (Kuwait)**.

336. "Any circulant-like preconditioner for multilevel Toeplitz is not optimal", for the *SPIE - Session: Advanced Signal Processing Algorithms, Architectures and Implementations VII* (San Diego - California (USA) July 19th–24th 1998), **invitation by Prof. R. Plemmons - Wake Forest University - Winston-Salem - North Carolina (USA)**.

337. "Constructive techniques for approximating matrix-sequences", for the Conference *A Mathematical Journey through Analysis, Matrix Theory and Scientific Computation* in honor of R. Varga (Kent - Ohio (USA) March 25th–27th 1999). With C. Tablino Possio.

338. "Ergodic spectral theory and numerical analysis of linear systems for elliptic PDEs", for the *Second Workshop on "Large-Scale Scientific Computation"* (Sozopol (Bulgaria) June 2nd–6th 1999), **invitation by Prof. D. Bini -**

University of Pisa (Italy) and by Prof. E. Tyrtyshnikov - Russian Academy of Sciences of Moscow (Russia).

339. "Ergodic spectral theory and numerical analysis of linear systems for elliptic PDEs", for the AMS/IMS/SIAM *Structured Matrices in Operator Theory, Numerical Analysis, Control, Signal and Image Processing"* (Boulder - Colorado (USA) June 26th - July 2nd 1999), **invitation by Prof. V. Olshevsky - Georgia State University - Atlanta - Georgia (USA), by Prof. D. Calvetti - Case Western University - Ohio (USA), and by Prof. L. Reichel - Kent University - Ohio (USA)**.

340. "Korovkin test functions, matrix sequences and approximation", for the *4th International Conference on Functional Analysis and Approximation Theory* (Acquafredda di Maratea (Italy) September 22nd–28th 2000).

341. "A multigrid approach for multilevel circulant linear systems", for the *Second Workshop on Numerical Analysis and Applications: symposium on "Recent Advances on Structured Matrices and Applications"* (Rousse (Bulgaria) June 11th–15th 2000). With C. Tablino Possio.

342. "Multidimensional quadrature of nonsmooth functions via ergodic formulas", for the *Ninth International Congress on Computational and Applied Mathematics* (Louvain (Belgium) July 17th–21st 2000), **invitation by Prof. L. Wuytack - University of Louvain (Belgium)**.

343. "Distribution results on the algebra generated by Toeplitz sequences", for the Conference *Structured matrices: analysis, algorithms and applications* (Cortona (Italy) September 25th–29th 2000), **invitation by Prof. D. Bini - University of Pisa (Italy)**.

344. "Optimal vs Superoptimal preconditioning: which is the best?", for the Conference *Structured matrices: analysis, algorithms and applications* (Cortona (Italy) September 25th–29th 2000), **invitation by Prof. D. Bini - University of Pisa (Italy)**. With F. Di Benedetto.

345. "A Linear Algebra view of some orthogonal polynomials problems", for the Conference *Toeplitz Matrices* in honor of Silbermann (Chemnitz (Germany) April 8th–11th 2001), **invitation by Prof. A. Böttcher - University of Chemnitz (Germany)**.

346. "Regularizing preconditioners for ill-posed Toeplitz systems", for the Conference *Applied Inverse Problems: Theoretical and Computational Aspects* (Montecatini (Italy) June 18th–22nd 2001). With F. Di Benedetto and C. Estatico (speaker).

347. "Asymptotic zero distribution of orthogonal polynomials with discontinuously varying recurrence coefficients", for the Conference *Algorithms for Approximation IV* (Huddersfield (UK) July 15th–20th 2001).

348. "A Linear Algebra view of some orthogonal polynomials problems", for the Conference AMS/IMS/SIAM *Fast Algorithms in Mathematics, Computer Science and Engineering"* (South Hadley - Massachusetts (USA) August 5th–9th 2001), **invitation by Prof. V. Olshevsky - Georgia State University - Atlanta - Georgia (USA)**.

349. "Multigrid Methods for multilevel matrices belonging to multilevel Trigonometric Algebras", for the Conference SIAM *Linear Algebra in Signals, Systems, and Control* (Boston - Massachusetts (USA) August 13th–15th 2001), **invitation by Prof. R.H. Chan - Chinese University of Hong Kong (China)**.

350. "Multigrid Methods for Multilevel Structures", for the Conference *Numerical Algorithms 2001* in honor of Brezinski (Marrakesh (Morocco) October 1st–5th 2001).

351. "Negative and Positive results on preconditioning strategies for Toeplitz linear systems", for the Conference *Iterative Solvers for Large Linear Systems* (Zurich (Switzerland) February 18th–21st 2002).

352. "15 years of iterative solvers for Toeplitz linear systems", for the *International Conference on Structured Matrices* (Hong Kong (China) May 29th - June 1st 2002), **invitation by Prof. M. Ng - City University of Hong Kong (China)**. With C. Tablino Possio.

353. "Recent advances on multigrid methods for (multilevel) structured linear systems", for the *International Conference on Structured Matrices* (Hong Kong (China) May 29th - June 1st 2002), **invitation by Prof. M. Ng - City University of Hong Kong (China)**. With C. Tablino Possio (speaker).

354. "Preconditioning techniques for ill-conditioned symmetric block Toeplitz systems", for the *International Conference on Structured Matrices* (Hong Kong (China) May 29th - June 1st 2002). With D. Noutsos (speaker) and P. Vassalos.

355. "Negative and Positive results on Structured Preconditioning for Structured Matrices", for the joint Conference AMS-UMI, mini-symposium *Structured Matrices Analysis and Applications* (Pisa (Italy) June 12th–16th 2002), **invitation by Prof. D. Bini - University of Pisa (Italy) and by Prof. T. Kailath - Stanford University - California (USA)**.

356. "Regularizing preconditioners in image restoration", for the joint Conference AMS-UMI, mini-symposium *Structured Matrices Analysis and Applications* (Pisa (Italy) June 12th–16th 2002). With F. Di Benedetto (speaker) and C. Estatico.

357. "Application of multigrid techniques to image restoration problems", for the Conference *SPIE - Session: Advanced Signal Processing Algorithms, Architectures and Implementations XII* (Seattle - Washington (USA) July 7th–11th

2002), **invitation by Prof. V. Olshevsky - Georgia State University - Atlanta - Georgia (USA)**. With R.H. Chan and C. Tablino Possio.

358. "MGM optimal convergence for certain (multilevel) structured linear systems", for the *GAMM Annual Meeting 2003* (Abbano Terme (Italy) March 24th–28th 2003). With A. Aricò (speaker) and M. Donatelli.

359. "MGM optimal convergence for (multilevel) matrix algebra linear systems", for the Workshop *Nonlinear Approximations in Numerical Analysis* (Moscow (Russia) June 22nd–25th 2003), **invitation by Prof. E. Tyrtyshnikov - Russian Academy of Sciences of Moscow (Russia)**. With A. Aricò and M. Donatelli.

360. "Matrix algebra preconditioners for multilevel Toeplitz systems do not insure optimal convergence rate", for the Workshop *Nonlinear Approximations in Numerical Analysis* (Moscow (Russia) June 22nd–25th 2003). With D. Noutsos (speaker) and P. Vassalos.

361. "A preconditioning proposal for two-level Toeplitz systems", for the Workshop *Nonlinear Approximations in Numerical Analysis* (Moscow (Russia) June 22nd–25th 2003). With D. Noutsos and P. Vassalos (speaker).

362. "Anti-reflective boundary conditions and fast deblurring models", for the Conference *SPIE - Session: Advanced Signal Processing Algorithms, Architectures and Implementations XIII* (San Diego - California (USA) August 3rd–8th 2003).

363. "A V-cycle convergence proof for structured matrices", for the Conference *11th GAMM-Workshop on Multigrid and Hierarchic Solution Techniques* (Leipzig (Germany) August 25th–27th 2003).

364. "Boundary conditions and fast deblurring models", for the *Workshop in Numerical Linear Algebra and Its Applications* (Monopoli (Italy) September 22nd–24th 2003), **invitation by Prof. N. Mastronardi - CNR Bari (Italy)**. With M. Donatelli (speaker).

365. "Boundary conditions and fast deblurring models", plenary lecture for the Workshop *Mathematics in Image Processing* (Singapore December 8th–9th 2003), **invitation by Prof. Z. Shen - National University of Singapore**.

366. "Multigrid methods and application to image restoration problems", for the Conference *Numerical Methods in Imaging Science and Information Processing* (Singapore December 15th–19th 2003), **invitation by Prof. R.H. Chan - Chinese University of Hong Kong (China)**.

367. "Spectral analysis of matrix sequences and discretized Partial Differential Equations ", for the Conference *First AMS - Indian Mathematicians Meeting - Special Session on 'The Many Facets of Linear Algebra and Matrix Theory'* (Bangalore (India) December 17th–20th 2003), **invitation by Prof. R.**

Bhatia - Indian Statistical Institute - Delhi (India) and by Prof. R. Brualdi - Wisconsin University - Madison - Wisconsin (USA).

368. "Boundary conditions and fast deblurring models", for the Workshop *Iterative methods for PDEs* (Uppsala (Sweden) February 27th 2004), **invitation by Dr. S. Holmgren - Uppsala University (Sweden)**.

369. "A regularized Multigrid for inverse problems in imaging", for the Workshop *Applied Computational Inverse Problems* (Florence (Italy) March 22nd–25th 2004). With M. Donatelli (speaker).

370. "Boundary conditions and fast deblurring models", for the Workshop *Applied Computational Inverse Problems* (Florence (Italy) March 22nd–25th 2004). With M. Donatelli (speaker).

371. "Comparing the expected number of failures caused by Testing Techniques", for the Conference *International Symposium on Software Testing and Analysis* (Boston - Massachusetts (USA) July 11th–14th 2004). With S. Morasca (speaker).

372. "Anti-reflective boundary conditions and fast deblurring models value problems", for the *16th Symposium on Mathematical Theory of Networks and Systems* (Louvain (Belgium) July 4th–9th 2004), **invitation by Prof. V. Olshevski - University of Connecticut (USA)**.

373. "Majorization tools and Toeplitz tools in PDEs preconditioning", for the *International Summer School in Numerical Linear Algebra and Its Applications* (Monopoli (Italy) September 12th–19th 2004), **invitation by Prof. N. Mastronardi - CNR Bari (Italy)**.

374. "Boundary conditions and fast deblurring models", for the Conference *Structured Numerical Linear Algebra Problems: Algorithms and Applications* (Cortona (Italy) September 19th–24th 2004).

375. "On the regularizing power of multigrid-type algorithms", for the Conference *Structured Numerical Linear Algebra Problems: Algorithms and Applications* (Cortona (Italy) September 19th–24th 2004). With M. Donatelli (speaker).

376. "Asymptotic behavior of the condition number of two-level Toeplitz matrix sequences", for the Conference *Structured Numerical Linear Algebra Problems: Algorithms and Applications* (Cortona (Italy) September 19th–24th 2004). With D. Noutsos (speaker) and P. Vassalos.

377. "Fast and numerically stable algorithms for discrete cosine and Hartley transforms", for the Conference *Structured Numerical Linear Algebra Problems: Algorithms and Applications* (Cortona (Italy) September 19th–24th 2004). With G. Plonka and M. Tasche (speaker).

378. "GLT sequences as a Generalized Fourier Analysis and applications", for the Workshop *Numerical Linear Algebra for PDEs* (Uppsala (Sweden) May 13th 2005), **invitation by Prof. M. Neytcheva - Uppsala University (Sweden)**.

379. "Anti-reflective boundary conditions, re-blurring and fast de-blurring methods", for the *Conference on Numerical Analysis: the state of the art 2005* (Cosenza (Italy) May 19th–21st 2005). With M. Donatelli and C. Estatico.

380. "Hartley transforms: stable and fast algorithms and some applications", for the *Conference on Numerical Analysis: the state of the art 2005* (Cosenza (Italy) May 19th–21st 2005). With A. Aricò.

381. "GLT sequences as a Generalized Fourier Analysis and applications", for the *Householder Symposium XVI* (Seven Springs Mountain Resort - Pennsylvania (USA) May 23rd–27th 2005), **invitation by Prof. C. Van Loan - Cornell University - Ithaca - New York (USA)**.

382. "GLT sequences as a Generalized Fourier Analysis and applications", for the *Congress of Mathematics in the Mediterranean* (Almeria (Spain) June 6th–10th 2005), plenary talk (one hour), **invitation by Prof. A. Martinez-Finkelshtein - Almeria University - Almeria (Spain)**.

383. "From Majorization and Toeplitz tools to PDEs local domain analysis and preconditioning", for the *International Conference on Matrix Methods and Operator Equations* (Moscow (Russia) June 20th–25th 2005).

384. "Algebraic multigrid for multilevel structures: proof of optimality", for the *International Conference on Matrix Methods and Operator Equations* (Moscow (Russia) June 20th–25th 2005). With A. Aricò (speaker) and M. Donatelli.

385. "Fast Hartley transforms and applications to preconditioning", for the *International Conference on Matrix Methods and Operator Equations* (Moscow (Russia) June 20th–25th 2005). With M. Tasche (speaker).

386. "Two-level Toeplitz preconditioning: approximation results for matrices and functions", for the *International Conference on Matrix Methods and Operator Equations* (Moscow (Russia) June 20th–25th 2005). With D. Noutsos and P. Vassalos (speaker).

387. "Two-level preconditioning: approximation results for matrices and functions", for the Conference *HERCMA 2005: Hellenic European Research on Computer Mathematics and its Applications* (Athens (Greece) September 22nd–24th 2005). With D. Noutsos and P. Vassalos (speaker).

388. "Algebraic multigrid for multilevel structures: proof of optimality", for the Conference *EMG05* (Scheveningen (The Netherlands) September 27th–30th 2005). With A. Aricò (speaker) and M. Donatelli.

389. "On the regularizing power of multigrid-type algorithms", for the Conference *EMG05* (Scheveningen (The Netherlands) September 27th–30th 2005). With M. Donatelli (speaker).

390. "Canonical forms for certain rank one perturbations and an application to the Google PageRanking problem", for the Workshop *Algorithmic and Numerical Aspects in Web Search* (Pisa (Italy) February 6th–7th 2006), **invitation by Dr. G. Del Corso - University of Pisa (Italy)**. With R. Horn.

391. "Spectral analysis of non-Hermitian perturbations of Hermitian (structured) sequences", for the Workshop *Numerical Linear Algebra* (Uppsala (Sweden) March 6th 2006), **invitation by Prof. M. Neytcheva - Uppsala University (Sweden)**.

392. "Matrix structures and image restoration: boundary conditions, re-blurring, and regularizing multigrid-type algorithms", for the *Second International Conference on Structured Matrices* (Hong Kong (China) July 8th–11th 2006), **invitation by Prof. W.K. Ching - University of Hong Kong (China)**. With M. Donatelli (speaker).

393. "The conditioning of elliptic and semi-elliptic FD matrix sequences", for the *Second International Conference on Structured Matrices* (Hong Kong (China) July 8th–11th 2006). With D. Noutsos (speaker) and P. Vassalos.

394. "Jordan canonical form of the Google matrix: a potential contribution to the PageRank computation and to a general matrix theoretic result", for the Conference *Approximation and Iterative Methods* in the occasion of the retirement of Claude Breziski (Lille (France) June 22nd–23rd 2006), **invitation by Prof. B. Beckermann - UST of Lille - Lille (France)**. With R. Horn.

395. "Jordan structure of (parametric) rank-one perturbations and application to the Google PageRanking problem", for the *Meeting Italy-France* (Turin (Italy) July 3rd–7th 2006), **invitation by Prof. F. Saleri - Polytechnic of Milan (Italy)**.

396. "Spectral behavior of compact and Cesaro non-Hermitian perturbations of Hermitian (structured) sequences", for the *ILAS Meeting 2006* (Amsterdam (The Netherlands) July 18th–21st 2006), **invitation by Prof. M. Van Barel - KU Leuven (Belgium)**.

397. "V-cycle optimality proof for multilevel structures", for the *ILAS Meeting 2006* (Amsterdam (The Netherlands) July 18th–21st 2006). With A. Aricò (speaker) and M. Donatelli.

398. "Block band Toeplitz preconditioners derived from generating function approximations", for the *ILAS Meeting 2006* (Amsterdam (The Netherlands) July 18th–21st 2006). With D. Noutsos and P. Vassalos (speaker).

399. "V-cycle optimality proof for multilevel structures", for the *SIAM-GAMM Annual Meeting* (Dusseldorf (Germany) July 24th–27th 2006). With A. Aricò (speaker) and M. Donatelli.

400. "Image restoration with anti-reflective boundary conditions and re-blurring", for the *International Conference of Mathematicians* (Madrid (Spain) August 20th–30th 2006). With M. Donatelli and C. Estatico.

401. "Spectral behavior of compact and Cesaro non-Hermitian perturbations of Hermitian (structured) sequences", for the Conference *1st Dolomite Meeting*

on Approximation Theory in honor of Walter Gautschi (Alba di Canazei (Italy) September 8th–12th 2006). With L. Golinskii.

402. "Multigrid methods and regularization", for the Conference *Numerical Linear Algebra in Signal Processing* (Monopoli (Italy) September 11th–15th 2006), **invitation by Prof. N. Mastronardi - CNR Bari (Italy)**. With M. Donatelli (speaker).

403. "Spectral and computational properties of the anti-reflective algebras", for the Conference *Numerical Linear Algebra in Signal Processing* (Monopoli (Italy) September 11th–15th 2006). With A. Aricò (speaker) and M. Donatelli.

404. "GOOGLE PageRanking problem: the model and the analysis", for the Conference *Web Information Retrieval and Linear Algebra Algorithms* (Schloss Dagstuhl - Wadern (Germany) February 11th–16th 2007), **invitation by Prof. D. Szyld - Temple University of Philadelphia (USA)**.

405. "The asymptotic properties of the spectrum of non symmetrically perturbed Jacobi matrix sequences", for the Conference *Modern Analysis and Applications, dedicated to the centenary of M. Krein* (Odessa (Ukrain) April 14th–19th 2007). With L. Golinskii (speaker).

406. "A general context for GOOGLE's PageRanking algorithm", plenary talk (40 minutes) for the *2007 Haifa Matrix Theory Conference* (Haifa (Israel) April 16th–19th 2007). With R. Horn (speaker).

407. "Spectral analysis of block (multilevel) Toeplitz sequences with matrix-valued symbols and applications to Wireless Communications", plenary talk (40 minutes) for the Workshop *MATHESTIA* (Bayonne (France) April 25th–28th 2007), **invitation by Prof. M. Najim - Bordeaux University (France)**.

408. "The product of sequences of Toeplitz matrices: eigenvalue distribution, clustering, and attracting features", for the Workshop *Journée Toeplitz, Probabilité, Matrices Aleatoires - Bordeaux* (Bordeaux (France) June 20th 2007), **invitation by Prof. E. Strouse - Bordeaux University (France)**.

409. "The product of sequences of Toeplitz matrices: eigenvalue distribution, clustering, and attracting features", for the *International Conference on Matrix Methods and Operator Equations* (Moscow (Russia) July 22nd–28th 2007).

410. "A general context for GOOGLE's PageRanking algorithm", for the Conference *Numerical Linear Algebra in Internet Algorithms* (Monopoli (Italy) September 9th–15th 2007). With R. Horn.

411. "Asymptotic eigenvalue behavior for (non-normal) matrix sequences and applications", for the Conference *Matrix Analysis and Applications* (Luminy (France) October 15th–19th 2007), **invitation by Prof. A. Salam - Littoral University (France)**. With D. Sesana and E. Strouse.

412. "Une caracterisation du spettre d'un produit d'operateurs de Toeplitz", for the Conference *Functional and Harmonic Analysis* (Luminy (France) November 19th–22nd 2007). With D. Sesana and E. Strouse (speaker).

413. "Google Pageranking: the Model and the Analysis", for the *Householder Symposium XVII* (Zeuthen - Berlin (Germany) June 2nd–6th 2008), **invitation by Prof. A. Bunse-Gerstner - University of Bremen (Germany) and by Prof. V. Mehrmann - TU Berlin (Germany)**. With R. Horn.

414. "Matrix analysis and GOOGLE's pagerank", for the Conference in honor of the 65 years of Manfred Tasche (Hasenwinkel (Germany) June 6th 2008).

415. "Tools for analyzing the spectral distribution in a non Hermitian context", for the Conference *Structured Linear Algebra Problems: Analysis, Algorithms, and Applications* (Cortona (Italy) September 15th–19th 2008). With D. Sesana (speaker).

416. "Spectral analysis and preconditioning techniques for RBF-collocation matrices", for the *2nd Dolomite Workshop on Constructive Approximation and Applications* (Alba di Canazei (Italy) September 4th–9th 2009). With R. Cavoretto (speaker), A. De Rossi, and M. Donatelli.

417. "Algorithms and conjectures for the finite computation of the joint spectral radius of a set of matrices", for the *Advanced Workshop on Trends and Developments in Linear Algebra* (Trieste (Italy) July 6th–10th 2009). With A. Cicone, N. Guglielmi (speaker), and M. Zennaro.

418. "From Toeplitz matrix-sequences to Generalized Locally Toeplitz sequences", for the *Workshop on Advances and Trends in Integral Equations* dedicated to the Memory of Prof. Siegfried Prossdorf (Chemnitz (Germany) October 5th–9th 2009), **invitation by Prof. M. Lindner - University of Chemnitz (Germany)**.

419. "Spectral features and asymptotic properties for g-circulants and g-Toeplitz sequences", for the *International Conference on Structured Matrices and Tensors* (Hong Kong (China) January 18th–22nd 2010), **invitation by Prof. M. Ng - City University of Hong Kong (China)**. With E. Ngondiep and D. Sesana.

420. "Antireflective boundary conditions for deblurring problems", for the Workshop *Inverse Problems: Computation and Applications* (Luminy (France) May 31st - June 4th 2010), **invitation by Prof. L. Reichel - Kent University - Ohio (USA)**. With M. Donatelli (speaker).

421. "15 years of structured matrices ... and 60 years of Dario A. Bini!", for the *ILAS Meeting 2010* (Pisa (Italy) June 21st–25th 2010). With F. Di Benedetto (speaker).

422. "From Toeplitz matrix-sequences to Generalized Locally Toeplitz sequences", for the Conference *IWOTA 2010: symposium on Quantitative Spectral Theory of Block Matrix Operators* (Berlin (Germany) July 12th–16th 2010), **invitation by Prof. C. Tretter - University of Bern (Switzerland)**.

423. "Structures, hidden structures, algorithms, and applications", for the Workshop *Computational Mathematics in Science and Engineering: theory, algorithms, applications* (Lausanne (Switzerland) September 1st 2010), **invitation by Prof. A. Quarteroni - Polytechnic of Milan and EPFL (Switzerland)**.

424. "Multigrid methods for structured matrices and a regularized version in imaging", plenary lecture for the *European Multigrid Conference 2010 (EMG 2010)* (Ischia (Italy) September 19th–23rd 2010), **invitation by Prof. A. Borzi - University of Sannio (Italy) and by Prof. K. Oosterlee - CWI Amsterdam (The Netherlands)**. With M. Donatelli (speaker).

425. "On an augmented Lagrangian-based preconditioner of Oseen type problems", for the *Third International Conference on Numerical Algebra and Scientific Computing (NASC10)* (Peking (China) October 23rd–27th 2010). With X. He (speaker) and M. Neytcheva.

426. "Toeplitz operators with matrix-valued symbols and some (unexpected) applications", semi-plenary (40 minutes) for the Conference *Foundations of Computational Mathematics (FoCM11)*, session "Special functions and orthogonal polynomials" (Budapest (Ungaria) July 4th–14th 2011).

427. "Numerical simulations with degenerate parabolic PDEs for the conservation and restoration of cultural heritage", for the Conference *Foundations of Computational Mathematics (FoCM11)*, session "Numerical Linear Algebra" (Budapest (Hungary) July 4th–14th 2011).

428. "Toeplitz operators with matrix-valued symbols and some (unexpected) applications", for the *International Conference on Scientific Computing 2011 (SC2011)*, in honor of the 70 years of Claude Breziski and Sebastiano Seatzu (S. Margherita di Pula (Italy) October 10th–14th 2011).

429. "Structures, hidden structures, algorithms, and applications", plenary (one hour) for the *International Conference on Mathematical and Computational Models* (Coimbatore (India) December 19th–21th 2011), **invitation by Prof. R.S. Lekshmi - PSG College of Technology (India)**.

430. "Estimates for the minimum eigenvalue and the condition number of Hermitian (block) Toeplitz matrices", for the mini-symposium on 'Structured Matrices' organized by M. Bolten, in the framework of the *SIAM Conference on Applied Linear Algebra* (Valencia (Spain) June 18th–22nd 2012). With C. Garoni (speaker).

431. "Symbol approach in multigrid and preconditioning", plenary (one hour) for the *International Conference in Numerical Analysis* (Ioannina (Greece)

September 5th–8th 2012), **invitation by Prof. G. Akrivis and by Prof. D. Noutsos - Ioannina University (Greece)**.

432. "Symbol approach in a signal restoration problem involving block Toeplitz matrices", for the *International Workshop on Structured Matrices and Applications* (Louvain (Belgium) September 15th–20th 2012). With P. Brianzi, V. Del Prete, F. Di Benedetto (speaker), and M. Donatelli.

433. "Symbol approach in multigrid and preconditioning", plenary (one hour) for the *Matrices and operators Conference*, in honor of 60 years of Rajendra Bhatia (Bangalore (India) December 27th–30th 2012), **invitation by Prof. T. Bhattacharyya - Bangalore (India)**.

434. "Symbol approach in a signal-restoration problem involving (parametric) block Toeplitz matrices", for the **84th GAMM Annual Meeting** (Novi Sad (Serbia) March 18th–22nd 2013). With V. Del Prete, F. Di Benedetto, and M. Donatelli.

435. "A symbol approach in IgA matrix analysis (and in the design of efficient multigrid methods)", for the mini-symposium on 'IgA Oriented Spaces and Bases' organized by C. Manni and H. Speleers for the Conference *AT14* (San Antonio - Texas (USA) April 7th–10th 2013). With C. Garoni, C. Manni, F. Pelosi, and H. Speleers.

436. "A symbol approach in PDEs matrix analysis (and in the design of efficient multigrid methods)", for the *Advanced School and Workshop on Matrix Geometries and Applications* (Abdus Salam International Center on Theoretical Physics - Trieste (Italy) July 1st–12th 2013). With C. Garoni.

437. "A symbol approach in IgA matrix analysis (and in the design of efficient multigrid methods)", for the Conference *Nonlinear Evolution Equations and Linear Algebra for the Prof. Cornelis van der Mee 60-th birthday* (Cagliari (Italy) September 2nd–5th 2013). With C. Garoni.

438. "On the asymptotic spectrum of stiffness matrices arising from IgA", for the Conference *Isogeometric Analysis: Integrating Design and Analysis* (Austin - Texas (USA) January 8th–11th 2014). With M. Donatelli, C. Garoni, C. Manni, F. Pelosi, and H. Speleers.

439. "Spectral analysis for isogeometric Galerkin and collocation methods", for the Conference *Isogeometric Analysis: Integrating Design and Analysis* (Austin - Texas (USA) January 8th–11th 2014). With M. Donatelli, C. Garoni, C. Manni, F. Pelosi, and H. Speleers (speaker).

440. "Spectral analysis for isogeometric Galerkin and collocation methods", for the *Workshop on Structured Preconditioning and Iterative Methods with Applications* (Tsinghua Sanya International Mathematics Forum (TSIMF) March 24th–28th 2014).

441. "A symbol-based matrix analysis for isogeometric methods", for the Conference *Isogeometric Analysis and Applications* (Annweiler am Trifels (Germany) April 7th–10th 2014). With M. Donatelli, C. Garoni, C. Manni, F. Pelosi, and H. Speleers (speaker).

442. "On the Asymptotic Spectrum of Stiffness Matrices arising from IgA with Applications to the Design of Optimal (Multi-iterative) Multigrid Methods", for the Conference *Curves and Surfaces* (Paris (France) June 12th–18th 2014). With M. Donatelli, C. Garoni (speaker), C. Manni, F. Pelosi, and H. Speleers.

443. "Spectral analysis for isogeometric Galerkin and collocation methods", for the *19th International Linear Algebra Society Conference, ILAS 2014, satellite conf. of ICM*, mini-symposium on *Toeplitz matrices and Operators* (Seoul (Korea) August 6th–9th 2014), **invitation by Prof. E. Torsten - UC Santa Cruz (USA)**.

444. "Spectral analysis for isogeometric Galerkin and collocation methods", invited talk for the *6th Conference on Structured Numerical Linear and Multilinear Algebra: Analysis, Algorithms and Applications* (Kalamata (Greece) September 8th–12th 2014). With M. Donatelli, C. Garoni (speaker), C. Manni, and H. Speleers.

445. "Asymptotic behaviour and computation of geometric-like means of Toeplitz matrices", invited talk for the *6th Conference on Structured Numerical Linear and Multilinear Algebra: Analysis, Algorithms and Applications* (Kalamata (Greece) September 8th–12th 2014). With D. Bini, C. Garoni, B. Iannazzo (speaker), B. Jeuris, D. Sesana, and R. Vanderbril.

446. "Multigrid methods for structured matrices and a regularized version in imaging", for the *European Multigrid Conference 2014 (EMG 2014)* (Leuven (Belgium) September 9th–12th 2014). With M. Donatelli, C. Garoni, C. Manni, and H. Speleers (speaker).

447. "Spectral analysis for isogeometric Galerkin and collocation methods", for the Conference *Structured Matrices and Tensors: Analysis, Algorithms and Applications* (Taipei (Taiwan) December 8th–11th 2014), **invitation by Prof. W.W. Lin - National Chiao Tung University (Taiwan)**.

448. "IgA vs. FEA in the Spectral Approximation: Symbol Analysis", for the *GAMM Annual Meeting 2015* (Lecce (Italy) March 23rd–27th 2015). With C. Garoni (speaker), T.J.R. Hughes, A. Reali, and H. Speleers.

449. "Spectral behavior of preconditioned non-Hermitian multilevel block Toeplitz matrices with matrix-valued symbol", for the *GAMM Annual Meeting 2015* (Lecce (Italy) March 23rd–27th 2015). With M. Donatelli, C. Garoni, M. Mazza, and D. Sesana (speaker).

450. "Generalized Locally Toeplitz matrix sequences for analysing Finite element block matrices", for *The 10th International Conference on "Large Scale Scientific Computations"* (Sozopol (Bulgaria) June 8th–12th 2015). With A. Dorostkar (speaker) and M. Neytcheva.

451. "IgA vs. FEA in the Spectral Approximation: Symbol Analysis", for the Conference *New trends in Numerical Analysis: theory, methods, algorithms, applications* (Falerna (Italy) June 18th–20th 2015), in occasion of the 70-th birthday of Prof. Francesco Costabile. With C. Garoni (speaker), T.J.R. Hughes, A. Reali, and H. Speleers.

452. "Spectral analysis of matrices stemming from B-splines IgA-Galerkin methods for full elliptic PDEs", for the Conference *New trends in Numerical Analysis: theory, methods, algorithms, applications* (Falerna (Italy) June 18th–20th 2015), in occasion of the 70-th birthday of Prof. Francesco Costabile. With C. Garoni, C. Manni, D. Sesana, and H. Speleers (speaker).

453. "Generalized Locally Toeplitz matrix sequences for analysing Finite element block matrices", plenary for the *International Conference on Preconditioning Techniques for Scientific and Industrial Applications* (Eindhoven (The Netherlands) June 17th–19th 2015), **invitation by Prof. W. Schilders (chair) - TU Eindhoven (The Netherlands)**.

454. "Asymptotic spectrum of IgA matrix-sequences approximating PDEs, GLT, symbol, and design of fast iterative solvers", for the mini-symposium on "Geometry and Discretization" in the *9th European Solid Mechanics Conference* (Madrid (Spain) July 6th–10th 2015), **invitation by Prof. A. Buffa and by Prof. A. Reali, University of Pavia (Italy)**.

455. "Analysis and Application of the Spectral Symbol of Matrices in IgA", for the mini-symposium on "Geometry and Discretization" in the *9th European Solid Mechanics Conference* (Madrid (Spain) July 6th–10th 2015), **invitation by Prof. A. Buffa and by Prof. A. Reali, University of Pavia (Italy)**. With C. Garoni, T.J.R. Hughes, C. Manni, A. Reali, and H. Speleers (speaker).

456. "Generalized Locally Toeplitz matrix sequences, approximation of Partial Differential Equations, symbol, and fast solvers", plenary for the *Workshop on Structured Matrix Computations with Applications at TSIMF* (Sanya (China) March 14th–18th 2016), **invitation by Prof. R. Chan (chair) - Chinese U. Hong Kong (China)**.

457. "Generalized Locally Toeplitz matrix sequences, approximation of Partial Differential Equations, symbol, and fast solvers", plenary for *ILAS - Conference 2016* (Louvain (Belgium) 12th–18th July 2016), **invitation by Prof. R. Vanderbril - U. Leuven (Belgium)**.

458. "The GLT class as a Generalized Fourier Analysis and applications", for the mini-symposium on "Spline Approximation in Isogeometric Analysis" in the Congress *Approximation Theory 15 (AT15 2016)* (San Antonio - Texas (USA) 22nd–25th May 2016), **invitation by Prof H. Speleers - U. ROMA II**.

459. "The GLT class as a Generalized Fourier Analysis and applications", for the mini-symposium on "Mathematical Advances in Isogeometric Analysis"

in the *European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS Congress 2016)* Crete (Greece) 5th–10th June 2016), **invitation by Proff A. Buffa, J. Evans, T. Hughes, G. Sangalli**.

460. "Spectral analysis of IsoGeometric Physics-based preconditioning for fluid mechanics models", for the mini-symposium on "Mathematical Advances in Isogeometric Analysis" in the *European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS Congress 2016)* Crete (Greece) 5th–10th June 2016). With A. Ratnani (speaker), E. Franck, E. Sonnendrucker.

461. "The GLT class as a Generalized Fourier Analysis and applications", for the mini-symposium on "Recent Developments in Isogeometric Analysis" in the Congress *The Mathematics of Finite Elements and Applications (MAFELAP 2016)* (London (UK) 14th–17th June 2016), **invitation by Proff H. Speleers, C. Manni - U. ROMA II**.

462. "IgA, Spectral Analysis, and Numerical Linear Algebra Issues", for the mini-symposium on "Isogeometric Methods: theoretical and computational aspects" in the *SIMAI Conference 2016* (Milan 13rd–16th September 2016), **invitation by Proff G. Sangalli and L. Tamellini - U. Pavia**.

463. "Spectral Analysis of matrices coming from approximations of Integral Operators", for the mini-symposium on "Numerical methods for integral equations and applications" in the *SIMAI Conference 2016* (Milan 13rd–16th September 2016), **invitation by Proff A.Aimi, M.Diligenti, C.Guardasoni, S. Falletta, M.L. Sampoli**.

464. "Spectral analysis and numerical methods for fractional diffusion equations" in the *Numerical Linear Algebra with Applications* Congress (CIRM Luminy (France) 24th–28th October 2016). With M. Dehghan, M. Donatelli (speaker), M. Mazza, H. Moghaderi.

465. "Spectral analysis and spectral symbol for the 2D curl-curl (stabilized) operator with applications to the related iterative solutions", for the mini-symposium on"Advances on nonstandard FEM" in the *IMACS - Conference 2016* (Xiamen (China) 10th–14th December 2016). With A. Ratnani, M. Mazza (speaker).

466. "Spectral analysis and structure preserving preconditioners for fractional diffusion equations", for the mini-symposium on "High accuracy high efficiency methods for time dependent FDEs" in the *IMACS - Conference 2016* (Xiamen (China) 10–14 December 2016), on **invitation del Dr. X.M. Gu - U of Electr. Science (China)**. With M. Donatelli, M. Mazza (speaker).

467. "A Multilevel Iterative Approach Based on Discontinuous Galerkin with Space-Time Coarsening" in the Congress 11th International Conference on "Large-Scale Scientific Computations" (Sozopol (Bulgaria), 5th–9th June 2017). With P. Benedusi, X. Li, C. Garoni, R. Krause.

468. "Eigenvalues of banded symmetric Toeplitz matrices are known almost in close form? Numerics and Algorithmic proposals", in the *Householder Symposium XX* (Inn at Virginia Tech - Blacksburg, Virginia (USA) 18th–23rd June 2017), **invitation by Prof. J. Nagy - Emory - Atlanta - Georgia (USA)**.

469. "Spectral analysis and numerical methods for fractional diffusion equations", in the *Householder Symposium XX* (Inn at Virginia Tech - Blacksburg, Virginia (USA) 18th–23rd June 2017), **invitation by Prof. J. Nagy - Emory - Atlanta - Georgia (USA)**. With M. Dehghan, M. Donatelli, M. Mazza (speaker), H. Moghaderi.

470. "Symbol Approach in IgA Matrix Analysis: from the Spectral Analysis to the Design of Fast Solvers", for the mini-symposium on "Fast Numerical Linear Algebra Methods in Isogeometric Analysis" in the Congress *Platform for Advanced Scientific Computing (PASC) 2017* (Lugano (Svizzera) 26th–28th June 2017). With M. Donatelli, C. Garoni (speaker), C. Manni, H. Speelers.

471. "IGA for MagnetoHydroDynamics (MHD) problems", for the mini-symposium on "Fast Numerical Linear Algebra Methods in Isogeometric Analysis" in the Congress *Platform for Advanced Scientific Computing (PASC) 2017* (Lugano (Svizzera) 26th–28th June 2017). With A. Ratnani (speaker).

472. "Optimal and Robust Multigrid for Isogeometric Analysis", for the mini-symposium on "Fast Numerical Linear Algebra Methods in Isogeometric Analysis" in the Congress *Platform for Advanced Scientific Computing (PASC) 2017* (Lugano (Svizzera) 26th–28th June 2017). With M. Donatelli, C. Garoni, C. Manni, H. Speelers (speaker).

473. "Spectral Analysis of the 2D Curl-Curl (Stabilized) Operator with Applications to the Related Iterative Solutions", for the mini-symposium on "Fast Numerical Linear Algebra Methods in Isogeometric Analysis" in the Congress *Platform for Advanced Scientific Computing (PASC) 2017* (Lugano (Svizzera) 26th–28th June 2017). With M. Mazza (speaker), A. Ratnani.

474. "Spectral analysis and spectral symbol for pure and stabilized 2D curl-curl operator with applications to the related iterative solutions", in the Congress *Structured matrices: analysis, algorithms and applications* (Cortona (Ar) 4th–8th September 2017), **invitation by Prof. D. Bini - Università di Pisa**. With C. Manni, M. Mazza (speaker), A. Ratnani, H. Speleers.

475. "Spectral analysis and multigrid preconditioners for space-fractional diffusion equations", in the Congress *Structured matrices: analysis, algorithms and applications* (Cortona (Ar) 4th–8th September 2017), **invitation by Prof. D. Bini - Università di Pisa**. With M. Dehghan, M. Donatelli (speaker), M. Mazza, H. Moghaderi.

476. "A general tool for determining asymptotic spectral distribution of hermitian matrix sequences", in the Congress *Structured matrices: analysis, algorithms and applications* (Cortona (Ar) 4th–8th September 2017), **invitation**

by Prof. D. Bini - Università di Pisa. With C. Garoni, P. Vassalos (speaker).

477. "Spectral and convergence analysis of the discrete Adaptive Local Iterative Filtering method by means of Generalized Locally Toeplitz sequences", in the Congress *Structured matrices: analysis, algorithms and applications* (Cortona (Ar) 4th–8th September 2017), **invitation by Prof. D. Bini - Università di Pisa**. With A. Cicone (speaker), C. Garoni.

478. "Distribution results on the algebra generated by Toeplitz sequences", in the Congress *Structured matrices: analysis, algorithms and applications* (Cortona (Ar) 4th–8th September 2017), **invitation by Prof. D. Bini - Università di Pisa**. With S.E. Ekström, I. Furci, C. Garoni (speaker).

479. "Design of fast multigrid solvers for isogeometric analysis: a symbol approach", in the Congress *Structured matrices: analysis, algorithms and applications* (Cortona (Ar) 4th–8th September 2017), **invitation by Prof. D. Bini - Università di Pisa**. With M. Donatelli, C. Garoni, C. Manni, H. Speleers (speaker).

480. "Spectral Analysis of the 2D Curl-Curl (Stabilized) Operator with Applications to the Related Iterative Solutions", for the mini-symposium on "Efficient implementation of IGA" in the Congress *V International Conference on Isogeometric Analysis (IGA 2017)* (Pavia 11th–13th September 2017), **invitation by Prof. D. Schillinger -U. Minnesota - Minneapolis - Minnesota (USA), L. Pavarino - U. Pavia - Pavia, W. Zulehner - U. Kepler - Linz (Austria)**. With C. Manni, M. Mazza, A. Ratnani, H. Speleers.

481. "Using a function representation of structured matrices to construct efficient multigrid methods", for the Conference *ENUMATH 2017* (Bergen (Norwey) 25th–29th September 2017). With A. Dorostkar (speaker), M. Neytcheva.

482. "Staggered discontinuous Galerkin methods for the incompressible Navier-Stokes equations: spectral analysis and computational results", for the Conference *ENUMATH 2017* (Bergen (Norwey) 25th–29th September 2017). With M. Dumbser, F. Fambri, I. Furci (speaker), M. Mazza, M. Tavelli.

483. "Splitting Schemes and Compatible Spaces for Incompressible MHD", for the Conference *ENUMATH 2017* (Bergen (Norwey) 25th–29th September 2017). With M. Gaja (speaker), E. Franck, A. Ratnani, J. Lakhlili, M. Mazza, E. Sonnendruecker.

484. "Spectral Analysis of the 2D/3D Curl-Curl (Stabilized) Operator with Applications to the Related Iterative Solutions", for the minisimposium on "Advances in numerical linear algebra methods and applications to PDEs " in the Conference *ENUMATH 2017* (Bergen (Norwey) 25th–29th September 2017) **invitation by Prof V. Simoncini - U. Bologna and Dr. M. Tani - U. Pavia**. With C. Manni, M. Mazza (speaker), A. Ratnani, H. Speleers.

485. "Generalized Locally Toeplitz matrix sequences, approximation of Partial Differential Equations, symbol, and fast solvers", plenary for the Conference *DREAMS* (Rome 22nd–26th January 2018), **invitation by Dr. C. Giannelli - Florence U., Dr. H. Speleers - U. Rome Tor Vergata**.

486. "The attenuation of ESI and traditional seismic intensity with distance: preliminary results from Greek earthquakes", for the Congress *9th International INQUA Meeting on Paleoseismology, Active Tectonics and Archeoseismology (PATA)* (Possidi (Greece) June 25th–27th 2018). With M.F. Ferrario (speaker), I. Papanikolaou, M. Melaki, F. Livio, S. Serra Capizzano, A.M. Michetti.

487. "Intensity-distance attenuation: comparison between ESI and traditional seismic intensity for Mediterranean events", for the Congress *ESC* (Malta September 2nd–7th 2018). With M.F. Ferrario (speaker), I. Papanikolaou, M. Melaki, F. Livio, S. Serra Capizzano, A.M. Michetti.

488. "Generalized Locally Toeplitz matrix sequences, approximation of Partial Differential Equations, symbol, and fast solvers", plenary for the Conference *ICNAAM18*, in honor of the 60th birthday of Prof. Raymond Chan (Rhodes (Greece) September 13th–18th 2018), **invitation by Prof. T.E. Simos - King Saud University, Saudi Arabia**.

489. "Generalized Locally Toeplitz matrix sequences, approximation of Partial Differential Equations, symbol, and fast solvers", plenary for the Conference *Mathematical Modelling in Chemical Engineering and beyond* (Varese 13th–14th December 2018), **invitation by Prof. D. Cassani and S. Copelli - U. Insubria, Varese-Como**.

490. "Approximated infinite dimensional operators and their Spectral Analysis: what the GLT analysis can say", plenary for the Workshop *Mathematical Foundations of Isogeometric Analysis* (Oberwolfach (Germany) 14th–20th July 2019), **invitation by Prof. T. Hughes - University of Austin**. With C. Garoni.

491. "Matrix-Less Methods for Computing Eigenvalues of Structured Matrices", *GAMM - Computational Science and Engineering Workshop* (Ulm (Germany) 11th–22nd November 2019). With S.E. Ekström (speaker), I. Furci, C. Garoni.

492. "Spectral properties of structured graphs: theory and numerical applications", *LYNUM-IV: Lombardy Young NUmerical analysts Meeting*, (U. Milano) May 10th 2022. With M. Mazza, R. Sormani (speaker).

493. "Algebra preconditionings for 2D Riesz distributed-order space-fractional diffusion equations on convex domains", *LYNUM-IV: Lombardy Young NUmerical analysts Meeting*, (U. Milano) May 10th 2022. With A. Adriani (speaker), D. Bianchi, P. Ferrari.

494. "Eigenvalue superposition expansion for Toeplitz matrix-sequences, generated by linear combinations of matrix-order dependent symbols, and applications to fast eigenvalue computations", *ALAMA - Matrix Theory and Computation* (Alcalà (Spain) June 1st–3rd 2022). With J.M. Bogoya.

495. "Eigenvalue superposition expansion for Toeplitz matrix-sequences, generated by linear combinations of matrix-order dependent symbols, and applications to fast eigenvalue computations", *Householder XXI* (Porto Giardino (Italy) June 12th–17th 2022). With J.M. Bogoya.

496. "Approximated infinite dimensional operators and their Spectral Analysis: what the GLT analysis can say", *Winter-School on Domain Decomposition and Krylov Subspace Methods for PDEs and Ill-Posed Problems*, **invitation by Prof. K. Jibilou - University of Litoral**, (Mohammed VI Polytechnic University (UM6P) - Benguérir (Morocco) February 27th – March 3rd 2023).

497. "Symmetrized Toeplitz ... and symmetrized PDEs1", *Winter-School on Domain Decomposition and Krylov Subspace Methods for PDEs and Ill-Posed Problems*, **invitation by Prof. K. Jibilou - University of Litoral**, (Mohammed VI Polytechnic University (UM6P) - Benguérir (Morocco) February 27th – March 3rd 2023).

498. "Approximated infinite dimensional operators, (asymptotic) Spectral analysis, and GLT theory", *One Day Conference in honor of the 70 year of Prof. D. Noutsos*, **invitation by Prof. P. Vassalos - University of Economics and Business - Athens**, (Ioannina University - Ioannina (Greece) April 7th 2023).

499. "Approximated infinite dimensional operators, (asymptotic) Spectral analysis, and GLT theory", *Minicourse at Numerical Linear Algebra Days*, (GSSI - L'Aquila (Italy) May 10th–12th 2023).

500. "Fractional Differential Equations and Numerical Linear Algebra", *Minicourse at Numerical Linear Algebra Days*, (GSSI - L'Aquila (Italy) May 10th–12th 2023).

501. "Spectral properties of structured graphs: theory and numerical applications", *Numerical Linear Algebra Days*, (GSSI - L'Aquila (Italy) May 10th–12th 2023). With A. Adriani (speaker), D. Bianchi, P. Ferrari.

502. "Spectral analysis of weights-based finite element methods", *Numerical Linear Algebra Days*, (GSSI - L'Aquila (Italy) May 10th–12th 2023). With L. Bruni Bruno (speaker), M. Semplice.

503. "A smoothing analysis for multigrid methods applied to tempered fractional problems", *Numerical Linear Algebra Days*, (GSSI - L'Aquila (Italy) May 10th–12th 2023). With D. Ahamed (speaker at poster session), M. Donatelli, M. Mazza, K. Trotti.

504. "Asymptotic spectral analysis: two non-normal applications", *Numerical Linear Algebra Days*, (GSSI - L'Aquila (Italy) May 10th–12th 2023). With A.J.A. Schiavoni-Piazza (speaker at poster session), D. Meadon.

505. "Algebra preconditionings for 2D Riesz distributed-order space-fractional diffusion equations on convex domains", *LYNUM-V: Lombardy Young Numerical analysts Meeting*, (U. Milano) May 10th 2023. With M. Mazza, R. Sormani (speaker).

506. "Algebra preconditionings for 2D Riesz distributed-order space-fractional diffusion equations on convex domains", *Large Scale Scientific Computations 2023 (LSSC23)*, (Sozopol (Bulgaria) June 5th–9th 2023). With M. Mazza, R. Sormani.

507. "Approximated infinite dimensional operators and GLT theory", *Computational and Applied Mathematics 2023, in occasion of the retirement of Prof. M. Van Barel*, **invitation by Prof. N. Mastronardi - CNR Mauro Picone - Bari (Italy) and Prof. R. Vanderbril - KU Louvain (Belgium)**, (Selva di Fasano - (Italy) August 29th – September 1st 2023).

508. "Approximated infinite dimensional operators and GLT analysis", *Numerical Linear Algebra: In honor of Maya Neytcheva*, **invitation by Dr. S.-E. Ekström, del Prof. G. Kreiss - U. Uppsala (Sweden)**, (Uppsala - (Sweden) September 10th–11th 2023).

509. "The GLT analysis: an exposition", *Advances in Computational Mechanics (ACM 2023) — A Conference Celebrating the 80th Birthday of Thomas J.R. Hughes*, **invitation to the Minisymposium Mathematics of Numerical Methods by Proff. A. Buffa - EPFL Lausanne (Sweitzerland), M. Larson - U. Umea (Sweden), G. Sangalli - U. Pavia (Italy)**, (Austin - Texas - (USA) October 23rd–25th 2023).

510. "GLT analysis and Korovkin theory: an exposition", *International Conference on Spectral and Approximation Theory*, plenary talk, **invitation by Prof. K. Kumar - U. Kochin**, (Kochin - Kerala - (India) November 27th–30th 2023).

511. "Spectral analysis and fast solvers for cell-by-cell models", *28th International Conference on Domain Decomposition Methods (DD28)*, (KAUST - (Saudi Arabia) January 28th - February 2nd 2024). With P. Benedusi (speaker), A.J. Ellingsrud, P. Ferrari, M.E. Rognes.

512. "Eigenvalue Analysis in PDE Approximation and Imaging", *SIAM-ALA Conference*, (Paris - (France) May 13th–17th 2024).

513. "GLT analysis: exposition, review, update", *International Workshop on Toeplitz Operators, Wiener–Hopf Method, and Applications*, plenary talk, **invitation by Prof. S. Grudsky - Cinvestav-IPN (Mexico City)**, (Cartagena - (Colombia) October 6th-–12th 2024).

514. "The basics of the GLT analysis and nonsymmetric applications", *The International Workshop on Structured Matrix and Image Processing*, plenary talk, **invitation by Prof. R. Chan - Lingnan University (Hong Kong) and M. Donatelli - U. of Insubria**, (Nanjing - (China) November 15th–19th 2024).

515. "GLT analysis and beyond: a qualitative exposition", *International Conference on Mathematics and Decisions*, plenary talk, **invitation by Prof. K. Jbilou - University of Litoral and A. Ratnani - UM6P (Marrakesch)**, (Rabat - (Morocco) December 17th–20th 2024).

516. "Revisiting the notion of approximating class of sequences for handling approximated PDEs on moving or unbounded domains", *Numerical Linear Algebra Days*, (U. Pisa (Italy) January 20th–21st 2025). With A. Adriani (speaker), A.J.A. Schiavoni-Piazza, C. Tablino-Possio.

517. "Eigenvalues and singular values of variable Toeplitz matrices and matrix-sequences, with application to variable two-step BDF approximations to parabolic equations", *Numerical Linear Algebra Days*, (U. Pisa (Italy) January 20th–21st 2025). With N. Barakitis (speaker), V. Loi.

518. "Scalable Approximation and Solvers for Ionic Electrodiffusion in Cellular Geometries", *Numerical Linear Algebra Days*, (U. Pisa (Italy) January 20th–21st 2025). With P. Benedusi (speaker), A.J. Ellingsrud, P. Ferrari, H. Herlyng, M.E. Rognes.

519. "Blocking structures, approximation, and preconditioning", *Numerical Linear Algebra Days*, (U. Pisa (Italy) January 20th–21st 2025). With N. Barakitis, M. Donatelli, Samuele Ferri, Valerio Loi (speaker), R.L. Sormani.

520. "Generalized approximating class of sequences and asymptotic block structures with rectangular Toeplitz blocks", *Numerical Linear Algebra Days*, (U. Pisa (Italy) January 20th–21st 2025). With A. Adriani, A.J.A. Schiavoni-Piazza (speaker).

521. "Efficient regularization and numerical reconstruction methods for Inverse Source Problems in generalized diffusion equations", *Numerical Linear Algebra Days*, (U. Pisa (Italy) January 20th–21st 2025). With A. Ilyas (speaker), M.F. Khan.

522. "Matrix-sequences of geometric means in the case of hidden (asymptotic) structures", *Numerical Linear Algebra Days*, (U. Pisa (Italy) January 20th–21st 2025). With D. Ahmad, A. Ilyas, M.F. Khan (speaker).

523. "A critical view on the GLT theory: past, present, perspectives, and beyond", Workshop *Numerical Analysis and Applications to Data Science - N2ADS 2025*, plenary talk, **invitation by Prof. K. Jbilou - University of Litoral, M. Mitrouli - U. Kapodistrian**, (Athens - (Greece) April 7th–8th 2025).

524. "Geometric Means of HPD GLT Matrix-Sequences: Beyond Invertibility Assumptions and Convergence Properties", *International Conference on Numerical analysis (ICNA-25)*, (ISIT - London (UK) April 29th–30th 2025). With A. Ilyas, M.F. Khan (speaker).

525. "Updating the GLT analysis: new tools, applications, and beyond", *INdAM Workshop: Fast Methods for Isogeometric Analysis*, **invitation by Prof. M. Mazza - U. Roma II - Tor Vergata, M. Montardini - U. Pavia, H. Speleers - U. Roma II - Tor Vergata**, (Roma - (Italy) May 5th–9th 2025).

526. "Updating the GLT analysis: new tools and beyond", *Minisymposium "Scalable methods for cellular reaction-diffusion models in computational biology" - 29th International Conference on Domain Decomposition Methods*, **invitation by Prof. S. Scacchi - U. Milano**, (Milano - (Italy) June 23rd–27th 2025).

527. "Spectral analysis, approximation, and preconditioning for block structured matrix-sequences", *Minisymposium "Explicit and hidden asymptotic structures, GLT analysis, and applications" - The 26th Conference of the International Linear Algebra Society*, **invitation by Prof. S.-E- Ekström - U. Uppsala**, (Kaohsiung - (Taiwan) June 23rd–27th 2025). With N. Barakitis, M. Donatelli, Samuele Ferri, Valerio Loi (speaker), R.L. Sormani.

528. "GLT-based preconditioning for nonsymmetric Toeplitz systems", *Minisymposium "Explicit and hidden asymptotic structures, GLT analysis, and applications" - The 26th Conference of the International Linear Algebra Society*, **invitation by Prof. S.-E- Ekström - U. Uppsala**, (Kaohsiung - (Taiwan) June 23rd–27th 2025). With S.Y. Hon, R. Krause, C. Li, R.L. Sormani (speaker).

529. "GLT analysis and efficient regularing reconstruction for Inverse source problems in generalized diffusion equations", *Minisymposium "Explicit and hidden asymptotic structures, GLT analysis, and applications" - The 26th Conference of the International Linear Algebra Society*, **invitation by Prof. S.-E- Ekström - U. Uppsala**, (Kaohsiung - (Taiwan) June 23rd–27th 2025). With A. Ilyas (speaker), M.F. Khan, R.L. Sormani, G. Tento.

530. "Geometric means of structured matrix-sequences: maximal theory and beyond", *Minisymposium "Explicit and hidden asymptotic structures, GLT analysis, and applications" - The 26th Conference of the International Linear Algebra Society*, **invitation by Prof. S.-E- Ekström - U. Uppsala**, (Kaohsiung - (Taiwan) June 23rd–27th 2025). With D. Ahmad, A. Ilyas, M.F. Khan (speaker).

531. "GLT analysis: from graphs to the blocking theory", *PVD75 - Proper Value Decomposition 75, in honor of the seventy-fifth birthday of Paul Van Dooren*, **invitation by Prof. N. Mastronardi - CNR Mauro Picone - Bari (Italy), Prof. M. Van Barel - KU Louvain (Belgium), Prof. R.**

Vanderbril - KU Louvain (Belgium), (Selva di Fasano - (Italy) July 7th–12th 2025).

532. "Korovkin Approximation Theory meets Quaternion Toeplitz Systems: Superlinear (P)CG method via Frobenius-Optimal Preconditioners", *Minisymposium "Advances in approximation theory and its applications" - 5th Young Applied Mathematicians Conference (YAMC 2025)*, (U. Padova (Italy) September 22nd–26th 2025). With V. Loi (speaker)

National Conferences

533. "Tecniche di Precondizionamento per matrici di Toeplitz", for the *XIV Congresso dell'Unione Matematica Italiana* (Catania (Italy) September 19th–25th 1991). With F. Di Benedetto (speaker) and G. Fiorentino.

534. "Risultati spettrali di distribuzione, localizzazione per matrici precondizionate di Toeplitz", *long lecture*, for the *XV Congresso dell'Unione Matematica Italiana* (Padova (Italy) September 11th–16th 1995).

535. "Approssimazione costruttiva di successioni di matrici", for the *XVI Congresso dell'Unione Matematica Italiana* (Naples (Italy) September 13th–18th 1999).

536. "Precondizionatori regolarizzanti per la ricostruzione di immagini", for the *XVII Congresso dell'Unione Matematica Italiana* (Milan (Italy) September 7th–13th 2003). With F. Di Benedetto (speaker) and C. Estatico.

537. "Anti-reflective BCs, re-blurring, and regularizing techniques", for the *Congresso SIMAI2006* (Ragusa (Italy) May 21st–26th 2006). With M. Donatelli and C. Estatico (speaker).

538. "Strutture, Strutture nascoste, Algoritmi, Applicazioni", plenary (50 minutes) for the *Congresso GNCS 2008* (Montecatini (Italy) February 3rd–5th 2008), **invitation by Prof. A. Bellen - Head GNCS**.

539. "Approccio funzionale al multigrid ed al precondizionamento per problemi strutturati", plenary (50 minutes) for the *XIX Congresso dell'Unione Matematica Italiana* (Bologna (Italy) September 12th–18th 2011), **invitation by Prof. F. Brezzi - UMI President**.

540. "A multigrid method for Finite Volume approximations of space-Fractional Diffusion Equations", for the XXI Congresso dell'Unione Matematica Italiana (Pavia (Italy) September 2nd–6th 2019). With M. Donatelli and M. Mazza (speaker).

541. "The eigenvalue distribution of special 2-by-2 block matrix sequences, with applications to the case of symmetrized Toeplitz structures", for the XXI congresso dell'Unione Matematica Italiana (Pavia (Italy) September 2nd–6th 2019). With P. Ferrari (speaker), I. Furci, S. Hon, M.A. Mursaleen.