

CV by Stefano SERRA CAPIZZANO (October 9th, 2017)

**Stefano Serra Capizzano**

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**Date of Birth** 2nd August 1967.

**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**

Temporary Professor of Calculus (University of Calabria): 1995-1996;  
Assistant Professor of Numerical Analysis (University of Florence): 1996-2000;  
Associate Professor of Numerical Analysis (University of Insubria): 2000-2006;  
Elected 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.  
Head of the Department of Science and High Technology: from August 1st 2011 to October 1st 2017.  
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Dean of the Faculty of Sciences - Como, U. Insubria: from May 27th 2008 till September 30th 2011 (the Faculty has been replaced by the Department of Science and High Technology).

### **Teaching activity**

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 Theory 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 Szegő* 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), Master in Computational Sciences at USI Lugano (Switzerland)

Year 2017-18: *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), Master in Computational Sciences at USI Lugano (Switzerland)

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

### **PhD students**

Marco Donatelli (PhD 2006): Associate Professor (Insubria U.)–habilitation Full Professor (2017);

Paris Vassalos (PhD 2008): Assistant Professor (permanent position) in Athens, Business School of Athens;

Antonio Aricó: Assistant Professor (permanent position) in Naples, third U. of Naples;

Antonio Cicone (PhD 2010): Marie Curie PostDoc, U. of L’Aquila;

Eric Ngondiep (PhD 2011): Lecturer in Yaoundé U., Cameroun;

Debora Sesana (PhD 2011): Senior PostDoc (Insubria U.) – habilitation Associate Professor (2017);

Stefano Hajek (PhD 2013): Resp. Risk Models (Milano), Unipol Insurances;

Carlo Garoni (PhD 2015): INDAM Marie Curie PostDoc (USI Lugano);

Malik Zaka Ullah (PhD 2015): Lecturer King Abdulaziz U., Jeddah, Saudi Arabia;

Mariarosa Mazza (PhD 2016): PostDoc at IIP - Max Planck Inst., Munich.

Other 8 PhDs in Italy and Sweden

F. Ahmad (Insubria U.)

G. Barbarino (Scuola Normale Superiore)

M. A. Cardella (Insubria U.)

F. Durastante (Insubria U.)

S-E. Ekstrom (Uppsala U.)

B. Fagiolini (Insubria U.)

I. Furci (Insubria U.)

M. A. Mursaleen (Insubria U.)

### **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. Tyrtysnikov).

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: Business School - Athens (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: Business School - Athens (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.

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).

### **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 Scientiarum 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 list 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 [50,65,69,74,86,90,89, 84, 97, 77, 75] evaluated as excellent by the Ministry National evaluation of research by the panel CIVR 01-03 and VTR 04-08 (<http://vtr2006.cineca.it/php4/vtr-aree.php>) and ANVUR, for ranking GNCS-INDAM (Nation 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”;  
Guest Editor of “J. Comput. Appl. Math.” – Special Issue on Algorithms for the WEB;  
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 – present).

### **Attending and Organization of Conferences**

He attended to more than 60 international conferences and more than 20 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).

### **Organization of Scientific Projects**

He has been involved in several national (PRIN 04, 06, 08 as head of a scientific unit) and international scientific projects on Structured Numerical Linear Algebra, Numerical Linear Algebra and Scientific Computing. Among them he was Director of a GNCS - INDAM (National Institute on Mathematics) project on *Precondi-*

tioning for indefinite and non symmetric systems arising in certain differential and integral equations, of a MURST - “Rientro Cervelli” (Ministry of University and Research) project on *Multigrid and Wavelets algorithms for image restoration problems* with M. Tasche (Rostock), and of several Projects with R. Chan (Hong Kong - China), D. Noutsos (Ioannina - Greece). Moreover he is part of the Seminar Board of the *International Seminar on Matrix Methods and Operator Equations* (see [www.matrices.narod.ru](http://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, he is the President of the PhD Program of Como - Insubria (Mathematics of Computation: Models, Structures, Algorithms, and Applications).

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.

## List of main publications of Stefano Serra Capizzano

### Books/Monographs

1. “The theory of 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.
2. “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** (2017), in press; 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 e M. Mazza.



3. “The theory of multilevel Generalized Locally Toeplitz sequences: theory and applications - Vol II”, in preparation **SPRINGER - Springer Monographs in Mathematics**. Preliminary version in Technical Report, N. 2, February 2017, Department of Information Technology, Uppsala University, <http://www.it.uu.se/research/publications/reports/2017-002/>  
With C. Garoni.

### Volumes Edited

1. “Numerical linear algebra, internet and large scale applications”, **Journal of Computational and Applied Mathematics**, Vol. 234, N.11 (2010). M. Berry, D.A. Bini, N. Mastronardi and S. Serra-Capizzano Eds.
2. “Special issue on New Trends in Numerical Analysis: Theory, Methods, Algorithms and Applications (NETNA2015)”, **Applied Numerical Mathematics**, Vol.116 (2017).  
F. Dell’Accio, M.I. Gualtieri, S. Serra-Capizzano and G. Wanner Eds.

### Journals

1. “Multigrid methods for Toeplitz matrices”, **Calcolo**, Vol. 28, N.3-4 (1991), pp. 283–305. *MR: 94c 65039; SC: 65F10*. With G. Fiorentino.
2. “C.G. Preconditioning for Toeplitz Matrices”, **Computers and Mathematics with Applications**, Vol. 25, N.6 (1993), pp. 33–45. *MR: 93h 65063; SC: 65F35*. With F. Di Benedetto and G. Fiorentino.
3. “Multi-iterative methods”, **Computers and Mathematics with Applications**, Vol. 26, N.4 (1993), pp. 65–87. *MR: 94f 65033; SC: 65F10*.
4. “Preconditioning strategies for asymptotically ill-conditioned block Toeplitz systems”, **BIT**, Vol. 34, N.4 (1994), pp. 579–594. *MR: 98a 65052; SC: 65F20 (15A12, 65F50)*.
5. “New PCG based algorithms for the solution of Hermitian Toeplitz systems”, **Calcolo**, Vol. 32 (1995), pp. 153–176. *MR: 99a 65053; SC: 65F30*.
6. “On the extreme spectral properties of symmetric Toeplitz matrices generated by  $L^1$  functions with several global minima/maxima”, **BIT**, Vol. 36, N.1 (1996), pp. 135–142. *MR: 98a 65051; SC: 65F15 (65F10)*.
7. “Fast parallel solvers for elliptic problems”, **Computers and Mathematics with Applications**, Vol. 32, N.2 (1996), pp. 61–68. *MR: 97a 65216; SC: 65N22 (65F35)*. With G. Fiorentino.
8. “Multigrid methods for symmetric positive definite block Toeplitz matrices with nonnegative generating functions”, **SIAM Journal on Scientific Computing**, Vol. 17, N.5 (1996), pp. 1068–1081. *MR: 97h 65039; SC: 65F10*. With G. Fiorentino.

9. “Preconditioning strategies for Hermitian Toeplitz systems with nondefinite generating functions”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 17, N.4 (1996), pp. 1007–1019. *MR: 98a 65042; SC: 65F10.*
10. “Asymptotic expansion and extrapolation for Bernstein polynomials and some applications”, **BIT**, Vol. 36, N.4 (1996), pp. 676–687. *MR: 97j 65022; SC: 65D15 (65B05).* With F. Costabile and M.I. Gualtieri.
11. “A practical algorithm to design fast and optimal Toeplitz preconditioners for Hermitian Toeplitz systems”, Proc. *Workshop on Toeplitz matrices* (Cortona (Italy) September 9th–12th 1996), D. Bini and F. Di Benedetto Eds., (**Calcolo**, Vol. 33 (1996), pp. 209–222). *MR: 1 627676; SC: 65F35.*
12. “Multigrid methods for indefinite Toeplitz systems”, Proc. *Workshop on Toeplitz matrices* (Cortona (Italy) September 9th–12th 1996), D. Bini and F. Di Benedetto Eds., (**Calcolo**, Vol. 33 (1996), pp. 223–236). *MR: 99e 65070; SC: 65F30.* With G. Fiorentino.
13. “Optimal, quasi-optimal and superlinear preconditioners for asymptotically ill-conditioned positive definite Toeplitz systems”, **Mathematics of Computation**, Vol. 66, N.218 (1997), pp. 651–665. *MR: 97h 65056; SC: 65F35.*
14. “Sulle proprietà spettrali di matrici preconditionate di Toeplitz”, **Bollettino dell’Unione Matematica Italiana - Sez. A**, Vol. 11, N.2 (1997), pp. 463–483, *invitation by Prof. A. Conte*, President of Unione Matematica Italiana. *MR: 98i 15029; SC: 15A57 (47B35).*
15. “The extension of the concept of *generating* function to a class of preconditioned Toeplitz matrices”, **Linear Algebra and its Applications**, Vol. 267 (1997), pp. 139–161. *MR: 98j 15031; SC: 15A57.*
16. “On the extreme eigenvalues of Hermitian (block) Toeplitz matrices”, **Linear Algebra and its Applications**, Vol. 270 (1998), pp. 109–129. *MR: 98k 15034; SC: 15A57 (15A18).*
17. “An extrapolation technique for general exponential-type operators”, Proc. *Third International Conference on Functional Analysis and Approximation Theory* (Acquafredda di Maratea (Italy) September 23rd–28th 1996), F. Altomare and G. Mastroianni Eds., (**Rendiconti del Circolo Matematico di Palermo Serie II**, N.52 (1998), pp. 345–355). *MR: 99h 41025; SC: 41A25 (41A60, 65B05).* With F. Costabile and M.I. Gualtieri.
18. “An ergodic theorem for classes of preconditioned matrices”, **Linear Algebra and its Applications**, Vol. 282 (1998), pp. 161–183. *MR: 99k 65040; SC: 65F35 (15A12).*
19. “Korovkin theorems and linear positive Gram matrix algebra approximation of Toeplitz matrices”, *invitation by Prof. J. Nagy*, Proc. *ILAS workshop on “Fast Algorithms in Control, Signal and Image Processing”* (Winnipeg

- (Canada) June 6th–8th 1997), D. O’Leary, H. Park, A. Sayed, and P. Shivakumar Eds., (**Linear Algebra and its Applications**, Vol. 284 (1998), pp. 307–334). *MR: 99h 65088; SC: 65F35 (41A36, 47N40)*.
20. “Asymptotic results on the spectra of block Toeplitz preconditioned matrices”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 20, N.1 (1998), pp. 31–44. *MR: 99k 65039; SC: 65F35 (15A12, 15A57)*.
  21. “Toeplitz preconditioners constructed from linear approximation processes”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 20, N.2 (1998), pp. 446–465. *MR: 99j 65051; SC: 65F10 (65F35, 65T10)*.
  22. “The rate of convergence of Toeplitz based PCG methods for second order nonlinear boundary value problems”, **Numerische Mathematik**, Vol. 81, N.3 (1999), pp. 461–495. *MR: 99m 65202; SC: 65N12 (65N22)*.
  23. “A unifying approach to abstract matrix algebra preconditioning”, **Numerische Mathematik**, Vol. 82, N.1 (1999), pp. 57–90. *MR: 2000b 65084; SC: 65F35 (65F10)*. With F. Di Benedetto.
  24. “A Korovkin-type Theory for finite Toeplitz operators via matrix algebras”, **Numerische Mathematik**, Vol. 82, N.1 (1999), pp. 117–142. *MR: 2000b 65091; SC: 65F35 (65A18, 47B35, 65F10)*.
  25. “Superlinear PCG methods for symmetric Toeplitz systems”, **Mathematics of Computation**, Vol. 68 (1999), pp. 793–803. *MR: 99i 65049; SC: 65F30*.
  26. “Spectral and computational analysis of block Toeplitz matrices having non-negative definite matrix-valued generating functions”, **BIT**, Vol. 39, N.1 (1999), pp. 152–175. *MR: 2000a 65057; SC: 65F35 (28D99, 47B35, 65F10)*.
  27. “How to choose the best iterative strategy for symmetric Toeplitz systems”, **SIAM Journal on Numerical Analysis**, Vol. 36, N.4 (1999), pp. 1078–1103. *MR: 2000b 65058; SC: 65F10*.
  28. “Analytical analysis of Gavrilov-Guckenheimer bifurcation unfolding in the case of a PI controlled CSTR”, **SIAM Journal on Applied Mathematics**, Vol. 59, N.5 (1999), pp. 1716–1744. *MR: 2000f 37063; SC: 37G15 (34C23, 34H05, 35B32, 37G05)*. With C. Tablino Possio.
  29. “An iterative method for the computation of the solutions of nonlinear equations”, **Calcolo**, Vol. 36 (1999), pp. 17–34. *MR: 2001d 65070; SC: 65H05*. With F. Costabile and M.I. Gualtieri.
  30. “Spectral and structural analysis of high precision Finite Difference matrices for Elliptic Operators”, **Linear Algebra and its Applications**, Vol. 293 (1999), pp. 85–131. *MR: 2000i 65167; SC: 65N06 (15A12, 65F35)*. With C. Tablino Possio.

31. “Extreme singular values and eigenvalues of non Hermitian Toeplitz matrices”, **Journal of Computational and Applied Mathematics**, Vol. 108, N.1-2 (1999), pp. 113–130. *MR: 2000g 15005; SC: 15A18 (15A12, 47B35, 65F10)*. With P. Tilli.
32. “A Korovkin based approximation of multilevel Toeplitz matrices (with rectangular unstructured blocks) via multilevel trigonometric matrix spaces”, **SIAM Journal on Numerical Analysis**, Vol. 36, N.6 (1999), pp. 1831–1857. *MR: 2000m 65045; SC: 65F10 (41A36)*.
33. “Any circulant-like preconditioner for multilevel matrices is not superlinear”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 21, N.2 (1999), pp. 431–439. *MR: 2000i 65049; SC: 65F10 (15A12)*. With E. Tyrtyshnikov.
34. “Approximation of multilevel Toeplitz matrices via multilevel trigonometric matrix spaces and application to the preconditioning”, **Calcolo**, Vol. 36 (1999), pp. 187–213. *MR: 2001b 65040; SC: 65F10 (47B35, 65N12)*.
35. “On the analysis of a Chebyshev problem via spectral matrix theory”, **Computers and Mathematics with Applications**, Vol. 39, N.1-2 (2000), pp. 55–68. *MR: 2000m 65050; SC: 65F15 (41A10)*.
36. “How bad can positive definite Toeplitz matrices be?”, Proc. *Fourier Analysis and Applications*, (Kuwait City (Kuwait) May 3rd–6th 1998), F. Al Mussalam, A. Böttcher, P. Butzer, G. Heinig, and Vu Kim Tuan Eds., (**Numerical Functional Analysis and Optimization**, Vol. 21, N.1-2 (2000)), pp. 255–261). *MR: 2001c 15031; SC: 15A48 (65F10)*.
37. “Some theorems on linear positive operators and functionals and their applications”, **Computers and Mathematics with Applications**, Vol. 39, N.7-8 (2000), pp. 139–167. *MR: 2000m 47048; SC: 47B65 (41A36, 47N40)*.
38. “Locally  $X$  matrices, spectral distributions, preconditioning and applications”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 21, N.4 (2000), pp. 1354–1388. *MR: 2001f 65040; SC: 65F10 (47B35)*.
39. “Korovkin tests, approximation, and ergodic theory”, **Mathematics of Computation**, Vol. 69 (2000), pp. 1533–1558. *MR: 2001a 65052; SC: 65F30 (15A60, 41A36)*.
40. “A note on the asymptotic spectra of finite difference discretizations of second order elliptic Partial Differential Equations”, **Asian Journal of Mathematics**, Vol. 4 (2000), pp. 499–514.
41. “Optimal multilevel matrix algebra operators”, **Linear and Multilinear Algebra**, Vol. 48 (2000), pp. 35–66. *MR: 2001k 47048; SC: 47B48 (15A30, 65F30)*. With F. Di Benedetto.

42. “High-order finite difference schemes and Toeplitz based preconditioners for elliptic problems”, **Electronic Transactions on Numerical Analysis**, Vol. 11 (2000), pp. 55–84. *MR: 2001m 65146; SC: 65N02 (65N22)*. With C. Tablino Possio.
43. “Constructive techniques for approximating collocation linear systems”, Proc. *A Mathematical Journey through Analysis, Matrix Theory and Scientific Computation*, for the 70th birthday of Richard Varga (Kent - Ohio (USA) March 25th–27th 1999), D. Calvetti and L. Reichel Eds., (**Numerical Algorithms**, Vol. 25 (2000), pp. 323–339). With C. Tablino Possio.
44. “Distribution results on the algebra generated by Toeplitz sequences: a finite dimensional approach”, **Linear Algebra and its Applications**, Vol. 328, N.1-3 (2001), pp. 121–130. *MR: 2002b 15016; SC: 15A18 (47B35)*.
45. “Spectral analysis of (sequences of) graph matrices”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 23, N.2 (2001), pp. 339–348. With A. Frangioni.
46. “Spectral behavior of matrix sequences and discretized boundary value problems”, **Linear Algebra and its Applications**, Vol. 337, N.1-3 (2001), pp. 37–78.
47. “Positive representation formulas for finite difference discretizations of (elliptic) second order PDEs”, *invitation by Prof. V. Olshevsky*, **Contemporary Mathematics**, Vol. 281 (2001), [Structured Matrices in Mathematics, Engineering and Computer Sciences, Vol. II], pp. 295–318. With C. Tablino Possio.
48. “Asymptotic zero distribution of orthogonal polynomials with discontinuously varying recurrence coefficients”, **Journal of Approximation Theory**, Vol. 113 (2001), pp. 142–155. With A. Kuijlaars.
49. “Finite Element matrix-sequences: the case of rectangular domains”, **Numerical Algorithms**, Vol. 28 (2001), pp. 309–327. With C. Tablino Possio.
50. “Convergence analysis of Two-Grid methods for elliptic Toeplitz and PDEs matrix-sequences”, **Numerische Mathematik**, Vol. 92, N.3 (2002), pp. 433–465.  
[DOI: 10.0007/S002110100331 (15/11/2001)].
51. “Matrix algebra preconditioners for multilevel Toeplitz matrices are not superlinear”, **Linear Algebra and its Applications**, Vol. 343/344 (2002), pp. 303–319.
52. “Komleva type expansions and asymptotics for linear operators”, **Computers and Mathematics with Applications**, Vol. 43 (2002), pp. 799–820. With F. Costabile.

53. “Test functions, growth conditions and Toeplitz matrices”, Proc. *4th International Conference on Functional Analysis and Approximation Theory* (Acquafredda di Maratea (Italy) September 22nd–28th 2000), F. Altomare and G. Mastroianni Eds., (**Rendiconti del Circolo Matematico di Palermo** Serie II, N.68 (2002), pp. 791–795).
54. “On unitarily invariant norms of matrix valued linear positive operators”, **Journal of Inequalities and Applications**, Vol. 7, N.3 (2002), pp. 309–330. With P. Tilli.
55. “A note on superoptimal matrix algebra operators”, **Linear and Multilinear Algebra**, Vol. 50 (2002), pp. 343–372. With F. Di Benedetto.
56. “More inequalities and asymptotics on matrix valued Linear Positive Operators: the noncommutative case”, **Operator Theory: Advances and Applications**, “The Bernd Silbermann anniversary book” (2002), pp. 286–308 [Proc. of the Conference *Toeplitz Matrices*, for the 60th birthday of Bernd Silbermann (Chemnitz (Germany) April 8th–11th 2001), A. Böttcher, I. Gohberg, and P. Junghanns Eds.].
57. “Preconditioning strategies for 2D Finite Difference matrix sequences”, **Electronic Transactions on Numerical Analysis**, Vol. 16 (2003), pp. 1–29. With C. Tablino Possio.
58. “How to prove that a preconditioner can not be superlinear”, **Mathematics of Computation**, Vol. 72 (2003), pp. 1305–1316. MSC (2000): Primary 15A12, 15A18, 65F10, 47B25. With E. Tyrtyshnikov.
59. “Generalized Locally Toeplitz sequences: spectral analysis and applications to discretized Partial Differential equations”, **Linear Algebra and its Applications**, Vol. 366, N.1 (2003), pp. 371–402.
60. “Spectral equivalence and matrix algebra preconditioners for multilevel Toeplitz systems: a negative result”, *invitation by Prof. V. Olshevsky*, **Contemporary Mathematics**, Vol. 323 (2003), [Structured Matrices in Mathematics, Engineering and Computer Sciences], pp. 313–322. With D. Noutsos and P. Vassalos.
61. “From Toeplitz matrix sequences to zero distribution of orthogonal polynomials”, *invitation by Prof. V. Olshevsky*, **Contemporary Mathematics**, Vol. 323 (2003), [Structured Matrices in Mathematics, Engineering and Computer Sciences], pp. 329–340. With D. Fasino.
62. “Fat diagonals and Fourier analysis”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 24, N.4 (2003), pp. 1060–1070. With M. Hladnik and J. Holbrook.
63. “Analysis of preconditioning strategies for collocation linear systems”, **Linear Algebra and its Applications**, Vol. 369 (2003), pp. 41–75. With C. Tablino Possio.

64. “Superlinear preconditioners for Finite Differences linear systems”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 25, N.1 (2003), pp. 152–164. With C. Tablino Possio.
65. “A note on anti-reflective boundary conditions and fast deblurring models”, **SIAM Journal on Scientific Computing**, Vol. 25, N.4 (2003), pp. 1307–1325.
66. “Practical band Toeplitz preconditioning and boundary layer effects”, **Numerical Algorithms**, Vol. 34 (2003), pp. 427–440, [Proc. of the Conference *Numerical Algorithms 2001*, for the 60th birthday of Claude Brezinski (Marrakesh (Morocco) October 1st–5th 2001), M. Redivo-Zaglia and H. Sadok Eds.].
67. “The spectra of preconditioned Toeplitz matrix sequences can have gaps”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 25, N.4 (2004), pp. 930–946. With T. Huckle.
68. “Preconditioning strategies for Hermitian indefinite Toeplitz linear systems”, **SIAM Journal on Scientific Computing**, Vol. 25, N.5 (2004), pp. 1633–1654. With T. Huckle and C. Tablino Possio.
69. “V-cycle optimal convergence for certain (multilevel) structured linear systems”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 26, N.1 (2004), pp. 186–214. With A. Aricò and M. Donatelli.
70. “Multigrid preconditioners for symmetric Sinc systems”, **ANZIAM Journal**, Vol. 45(E) (2004), pp. 857–869. With M. Ng and C. Tablino Possio.
71. “Multigrid methods for multilevel circulant matrices”, **SIAM Journal on Scientific Computing**, Vol. 26, N.1 (2004), pp. 55–85. With C. Tablino Possio.
72. “Matrix algebra preconditioners for multilevel Toeplitz systems do not insure optimal convergence rate”, **Theoretical Computer Science**, Vol. 315 (2004), pp. 557–579. With D. Noutsos and P. Vassalos.
73. “On the analytical comparison of testing techniques”, **ACM SIGSOFT Software Engineering Notes archive**, Vol. 29, N.4 (2004), pp. 154–164. With S. Morasca.
74. “Preconditioned HSS methods for the solution of non-Hermitian positive definite linear systems and applications to the discrete convection-diffusion equation”, **Numerische Mathematik**, Vol. 99, N.3 (2005), pp. 441–484. With D. Bertaccini, G. Golub, and C. Tablino Possio. [DOI: 10.1007/s00211-004-0574-1 (14/12/2004)].
75. “Anti-reflective boundary conditions and re-blurring”, **Inverse Problems**, Vol. 21 (2005), pp. 169–182. With M. Donatelli.

76. “Asymptotic behavior of the condition number of two-level Toeplitz matrix sequences”, **Linear Algebra and its Applications**, Vol. 395 (2005), pp. 121–140. With D. Noutsos and P. Vassalos.
77. “Superoptimal Preconditioned Conjugate Gradient Iteration for Image Deblurring”, **SIAM Journal on Scientific Computing**, Vol. 26, N.3 (2005), pp. 1012–1035. With F. Di Benedetto and C. Estatico.
78. “Extrapolation methods for PageRank computations”, **Comptes Rendus de l’Académie des Sciences de Paris - Series I**, Vol. 340 (2005), pp. 393–397. With C. Brezinski and M. Redivo Zaglia.
79. “Preconditioning strategies for non Hermitian Toeplitz linear systems”, **Numerical Linear Algebra with Applications**, Vol. 12, N.2-3 (2005), pp. 211–220. With T. Huckle and C. Tablino Possio.  
[DOI: 10.1002/nlaa.396 (2004)].
80. “A preconditioning proposal for ill-conditioned Hermitian block Toeplitz systems”, **Numerical Linear Algebra with Applications**, Vol. 12, N.2-3 (2005), pp. 231–239. With D. Noutsos and P. Vassalos.  
[DOI: 10.1002/nlaa.398 (2004)].
81. “Two-Grid methods for banded linear systems from DCT III algebra”, **Numerical Linear Algebra with Applications**, Vol. 12, N.2-3 (2005), pp. 241–249. With R.H. Chan and C. Tablino Possio.  
[DOI: 10.1002/nlaa.399 (2004)].
82. “Numerical behaviour of multigrid methods for symmetric Sinc-Galerkin systems”, **Numerical Linear Algebra with Applications**, Vol. 12, N.2-3 (2005), pp. 261–269. With M. Ng and C. Tablino Possio.  
[DOI: 10.1002/nlaa.418 (2004)].
83. “How to deduce a proper eigenvalue cluster from a proper singular value cluster in the non-normal case”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 27, N.1 (2005), pp. 82–86. With D. Bertaccini and G. Golub.
84. “Jordan canonical form of the Google matrix: a potential contribution to the PageRank computation”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 27, N.2 (2005), pp. 305–312.
85. “Fast and numerically stable algorithms for discrete Hartley transforms and applications to preconditioning”, **Communications in Information and Systems**, Vol. 5, N.1 (2005), pp. 21–68. With A. Aricò and M. Tasche.
86. “On the regularizing power of multigrid-type algorithms”, **SIAM Journal on Scientific Computing**, Vol. 27, N.6 (2006), pp. 2053–2076. With M. Donatelli.



87. “Two-level Toeplitz preconditioning: approximation results for matrices and functions”, **SIAM Journal on Scientific Computing**, Vol. 28, N.2 (2006), pp. 439–458. With D. Noutsos and P. Vassalos.
88. “Can one hear the composition of a drum?”, **Mediterranean Journal of Mathematics**, Vol. 3, N.2 (2006), pp. 227–249. With S. Holmgren and P. Sundqvist.
89. “GLT sequences as a Generalized Fourier Analysis and applications”, **Linear Algebra and its Applications**, Vol. 419, N.1 (2006), pp. 180–233.
90. “Improved image deblurring with anti-reflective boundary conditions and re-blurring”, **Inverse Problems**, Vol. 22 (2006), pp. 2035–2053. With M. Donatelli, C. Estatico, and A. Martinelli.
91. “Block band Toeplitz preconditioners derived from generating function approximations: analysis and applications”, **Numerische Mathematik**, Vol. 104, N.3 (2006), pp. 339–376. With D. Noutsos and P. Vassalos.  
[DOI: 10.0007/S00211-006-020-07 (10/8/2006)].
92. “A general setting for the parametric Google matrix”, **Internet Mathematics**, Vol. 3, N.4 (2006), pp. 385–411. With R. Horn.
93. “The spectral approximation of multiplication operators via asymptotic (structured) linear algebra”, **Linear Algebra and its Applications**, Vol. 424, N.1 (2007), pp. 154–176. Volume in honor of Roger Horn.  
[DOI: 10.1016/j.laa.2006.08.029 (30/9/2006)].
94. “Boundary conditions and multiple images deblurring: the LBT case”, **Journal of Computational and Applied Mathematics**, Vol. 198, N.2 (2007), pp. 426–442. With M. Donatelli and C. Estatico.
95. “The asymptotic properties of the spectrum of non symmetrically perturbed Jacobi matrix sequences”, **Journal of Approximation Theory**, Vol. 144, N.1 (2007), pp. 84–102. With L. Golinskii.  
[DOI: 10.1016/j.jat.2006.05.002 (5/7/2006)].
96. “Spectral analysis and superlinear convergence of a preconditioned iterative method for the convection-diffusion equation”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 29, N.1 (2007), pp. 260–278. With D. Bertaccini and G. Golub.
97. “On the asymptotic spectrum of Finite Elements matrices”, **SIAM Journal on Numerical Analysis**, Vol. 45, N.2 (2007), pp. 746–769. With B. Beckermann.
98. “Simplification of a result on banded Toeplitz matrices and BVM methods”, **Numerische Mathematik**, Vol. 107, N.1 (2007), pp. 175–179.  
[DOI: 10.1007/S00211-007-084z (20/3/2007)].

99. “An elementary proof of the exponential conditioning of real Vandermonde matrices”, **Bollettino dell’Unione Matematica Italiana - Sez. B**, (2007), pp. 761–766.
100. “Filter factor analysis of an iterative multilevel regularizing method”, Proc. *ALA Conference at SIAM-GAMM Annual Meeting* (Dusseldorf (Germany) July 24th–27th 2006), **Electronic Transactions on Numerical Analysis**, Vol. 29 (2007/2008), pp. 163–177. With M. Donatelli.
101. “Stability of the notion of approximating class of sequences and applications”, **Journal of Computational and Applied Mathematics**, Vol. 219 (2008), pp. 518–536. With P. Sundqvist.  
[DOI: 10.1016/j.cam.2007.03.027 (27/3/2007)].
102. “Superoptimal approximation for unbounded symbols”, **Linear Algebra and its Applications**, Vol. 428, N.2-3 (2008), pp. 564–585. With C. Estatico.
103. “The conditioning of FD matrix sequences coming from semi-elliptic Differential Equations”, **Linear Algebra and its Applications**, Vol. 428, N.2-3 (2008), pp. 600–624. With D. Noutsos and P. Vassalos.
104. “Spectral analysis of the anti-reflective algebras and applications”, **Linear Algebra and its Applications**, Vol. 428, N.2-3 (2008), pp. 657–675. With A. Aricò and M. Donatelli.
105. “The anti-reflective algebra: structural and computational analysis, with application to image deblurring and denoising”, **CALCOLO**, Vol. 45, N.3 (2008), pp. 149–175. With A. Aricò and M. Donatelli.
106. “A note on the paper “A survey and some extensions of T. Chan’s preconditioner” by X.Q. Jin and Y.M. Wei”, in the Editor-in-Chief Note of **Linear Algebra and its Applications**, Vol. 430, N.1 (2009), pp. 587–593 (pages 591–592).
107. “Tools for the eigenvalue distribution in a non-Hermitian setting”, **Linear Algebra and its Applications**, Vol. 430 (2009), pp. 423–437. With D. Sesana.
108. “Finiteness properties of pairs of  $2 \times 2$  sign matrices via real extremal polytope norms”, **Linear Algebra and its Applications**, Vol. 432, N.2-3 (2010), pp. 796–816. With A. Cicone, N. Guglielmi, and M. Zennaro.
109. “The eigenvalue distribution of products of Toeplitz matrices - Clustering and attraction”, **Linear Algebra and its Applications**, Vol. 432, N.10 (2010), pp. 2658–2678. With D. Sesana and E. Strouse.
110. “Spectral features and asymptotic properties for  $g$ -circulants and  $g$ -Toeplitz sequences”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 31, N.4 (2010), pp. 1663–1687. With E. Ngondiep and D. Sesana.

111. “GOOGLE PageRanking problem: the model and the analysis”, **Journal of Computational and Applied Mathematics**, Vol. 234, N.11 (2010), pp. 3140–3169 (extension of (189)). With A. Cicone.  
[DOI: 10.1016/j.cam.2010.02.005 (7/2/2010)].
112. “Anti-reflective boundary conditions for deblurring problems”, *invitation by Prof. O Axelsson*, **Journal of Electrical and Computer Engineering**, special issue on Iterative Methods in Signal Processing, 2010, Article ID 241467, 18 pages. With M. Donatelli.  
[DOI: 10.1155/2010/241467].
113. “A Note on Algebraic Multigrid Methods for the Discrete Weighted Laplacian”, **Computers and Mathematics with Applications**, Vol. 60, N.5 (2010), pp. 1290–1298. With C. Tablino Possio.
114. “Approximating Classes of Sequences: the Hermitian Case”, **Linear Algebra and its Applications**, Vol. 434, N.4 (2011), pp. 1163–1170. With D. Sesana.  
[DOI: 10.1016/j.laa.2010.10.025 (23/11/2010)].
115. “Fast preconditioners for Total Variation deblurring with anti-reflective boundary conditions”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 32, N.3 (2011), pp. 785–805. With Z. Bai and M. Donatelli.
116. “On a augmented Lagrangian-based preconditioning of Oseen type problems”, **BIT**, Vol. 51, N.4 (2011), pp. 865–888. With X. He and M. Neytcheva.
117. “Analysis of multigrid preconditioning for implicit PDE solvers for degenerate parabolic equations”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 32, N.4 (2011), pp. 1125–1148. With M. Donatelli and M. Semplice.
118. “Canonical eigenvalue distribution of multilevel block Toeplitz sequences with non-Hermitian symbols”, **Operator Theory: Advances and Applications**, Vol. 221 (2012), pp. 273–295, Proc. IWOTA 2010. With M. Donatelli and M. Neytcheva.
119. “Spectral analysis and preconditioning techniques for radial basis functions collocation matrices”, **Numerical Linear Algebra with Applications**, Vol. 19 (2012), pp. 31–52. With R. Cavoretto, A. De Rossi, and M. Donatelli.
120. “Nonnegative Inverse Eigenvalue Problems with Partial Eigendata”, **Numerische Mathematik**, Vol. 120, N.3 (2012), pp. 387–431. With Z. Bai and Z. Zhao.
121. “A note on the (regularizing) preconditioning of  $g$ -Toeplitz sequences via  $g$ -circulants”, **Journal of Computational and Applied Mathematics**, Vol. 236, N.8 (2012), pp. 2090–2111. With C. Estatico, E. Ngondiep, and D. Sesana.

122. “Multigrid methods for Toeplitz linear systems with different size reduction”, **BIT**, Vol. 52, N.2 (2012), pp. 305–327. With M. Donatelli and D. Sesana.
123. “AMG preconditioning for degenerate diffusion equations on nonuniform grids with application to monument degradation”, **Applied Numerical Mathematics**, Vol. 68 (2013), pp. 1–18. With M. Donatelli and M. Semplice.
124. “A note on a discrete version of Borg’s Theorem via Toeplitz-Laurent operators with matrix-valued symbols”, **Bollettino dell’Unione Matematica Italiana - Sez. B**, Vol. 9, N.6 (2013), pp. 205–218. With L. Golinskii, K. Kumar, and N.N. Namboodiri.
125. “Multigrid methods for (multilevel) structured matrices associated with a symbol and related applications”, **Bollettino dell’Unione Matematica Italiana - Sez. B**, Vol. 9, N.6 (2013), pp. 319–347. With M. Donatelli.
126. “Preconditioners and Korovkin-type theorems for infinite dimensional bounded linear operators via completely positive maps”, **Studia Mathematica**, Vol. 218, N.2 (2013), pp. 95–118. With K. Kumar and N.N. Namboodiri.  
[DOI: 10.4064/sm218-2-1].
127. “Two-grid methods for Hermitian positive definite linear systems connected with an order relation”, **CALCOLO**, Vol. 51, N.2 (2014), pp. 261–285. With C. Tablino Possio.  
[DOI: 10.1007/s10092-013-0081-9 (2013)].
128. “Symbol approach in a signal-restoration problem involving block Toeplitz matrices”, **Journal of Computational and Applied Mathematics**, Vol. 272 (2014), pp. 399–416. With V. Del Prete, F. Di Benedetto, and M. Donatelli.  
[DOI: 10.1016/j.cam.2013.05.018 (2013)].
129. “On the spectrum of stiffness matrices arising from isogeometric analysis applied to second order elliptic problems”, **Numerische Mathematik**, Vol. 127, N.4 (2014), pp. 751–799. With C. Garoni, C. Manni, F. Pelosi, and H. Speleers.  
[DOI: 10.1007/s00211-013-0600-2 (12/12/2013)].
130. “A note on the eigenvalues of  $g$ -circulants (and of  $g$ -Toeplitz,  $g$ -Hankel matrices)”, **CALCOLO**, Vol. 51, N.4 (2014), pp. 639–659. With D. Sesana.  
[DOI: 10.1007/s10092-013-0104-6].
131. “A fast alternating minimization algorithm for Total Variation Deblurring without boundary artifacts”, **Journal of Mathematical Analysis and Applications**, Vol. 415, N.1 (2014), pp. 373–393. With Z. Bai, D. Cassani, and M. Donatelli.  
[DOI: 10.1016/j.jmaa.2014.01.061].

132. “Perturbation of operators and approximation of spectrum”, **Proceedings of Indian Academy of Sciences**, Vol. 124, N.2 (2014), pp. 205–224. With K. Kumar and N.N. Namboodiri.
133. “Spectral behavior of preconditioned non-Hermitian multilevel block Toeplitz matrices with matrix-valued symbol”, **Applied Mathematics and Computation**, Vol. 245 (2014), pp. 158–173. With M. Donatelli, C. Garoni, M. Mazza, and D. Sesana.
134. “Singular-value (and eigenvalue) distribution and Krylov preconditioning of sequences of sampling matrices approximating integral operators”, **Numerical Linear Algebra with Applications**, Vol. 21 (2014), pp. 722–743. With A.S. Al-Fhaid, D. Sesana, and M.Z. Ullah.  
[DOI: 10.1002/nla.1922 (9/1/2014)].
135. “An efficient multi-step Iterative Method for computing the numerical solution of systems of nonlinear equations associated with ODEs”, **Applied Mathematics and Computation**, Vol. 250 (2015), pp. 249–259. With M.Z. Ullah and F. Ahmad.
136. “Robust and optimal multi-iterative techniques for IgA Galerkin linear systems”, **Computer Methods in Applied Mechanics and Engineering**, Vol. 284 (2015), pp. 230–264. With M. Donatelli, C. Garoni, C. Manni, and H. Speleers.  
[DOI: 10.1016/j.cma.2014.06.001].
137. “Robust and optimal multi-iterative techniques for IgA collocation linear systems”, **Computer Methods in Applied Mechanics and Engineering**, Vol. 284 (2015), pp. 1120–1146. With M. Donatelli, C. Garoni, C. Manni, and H. Speleers.  
[DOI: 10.1016/j.cma.2014.11.036].
138. “Tools for determining the asymptotic spectral distribution of non-Hermitian perturbations of Hermitian matrix-sequences and applications”, **Integral Equations and Operator Theory**, Vol. 81 (2015), pp. 213–225. With C. Garoni and D. Sesana.  
[DOI: 10.1007/s00020-014-2157-6].
139. “Optimal Preconditioners for Finite Element Approximations of Convection-Diffusion Equations on structured meshes”, **Numerical Linear Algebra with Applications**, Vol. 22 (2015), pp. 123–144. With A. Russo and C. Tablino Possio.  
[DOI: 10.1002/nla.1941].
140. “A general tool for determining the asymptotic spectral distribution of Hermitian matrix-sequences”, **Operators and Matrices**, Vol. 9, N.3 (2015), pp. 549–561. With C. Garoni and P. Vassalos.

141. “Iterated fractional Tikhonov regularization”, **Inverse Problems**, Vol. 31 (2015) 055005 (34pp). With D. Bianchi, A. Buccini, and M. Donatelli. [DOI: 10.1088/0266-5611/31/5/055005].
142. “Spectral analysis and spectral symbol of  $d$ -variate  $\mathbf{Q}_p$  Lagrangian FEM stiffness matrices”, **SIAM Journal on Matrix Analysis and Applications**, Vol. 36, N.3 (2015), pp. 1100–1128. With C. Garoni and D. Sesana. [DOI: 10.1137/140976480].
143. “Higher Order Multi-step Iterative Method for Computing the Numerical Solution of Systems of Nonlinear Equations: Application to Nonlinear PDEs and ODEs”, **Applied Mathematics and Computation**, Vol. 269 (2015), pp. 972–987. With M.Z. Ullah, F. Ahmad, and E.S. Al-Aidarous.
144. “Accelerated multigrid for graph Laplacian operators”, **Applied Mathematics and Computation**, Vol. 270 (2015), pp. 193–215. With P. Dell’Acqua and A. Frangioni.
145. “Computational evaluation of multi-iterative approaches for solving graph-structured large linear systems”, **CALCOLO**, Vol. 52, N.4 (2015), pp. 425–444. With P. Dell’Acqua and A. Frangioni. [DOI: 10.1007/s10092-014-0123-y].
146. “Eigenvalue-eigenvector structure of Schoenmakers-Coffey matrices via Toeplitz technology and applications”, **Linear Algebra and its Applications**, Vol. 491 (2016), pp. 138–160. With E. Salinelli and D. Sesana. [DOI: 10.1016/j.laa.2015.03.017].
147. “Essential spectral equivalence via multiple step preconditioning and applications to ill conditioned Toeplitz matrices”, **Linear Algebra and its Applications**, Vol. 491 (2016), pp. 276–291. With D. Noutsos and P. Vassalos.
148. “Spectral analysis and structure preserving preconditioners for fractional diffusion equations”, **Journal of Computational Physics**, Vol. 307 (2016), pp. 262–279. With M. Donatelli and M. Mazza. [DOI: 10.1016/j.jcp.2015.11.061].
149. “Two-grid optimality for Galerkin B-spline isogeometric analysis linear systems”, **Computing and Visualization in Science**, Vol. 17, N.3 (2016), pp. 119–133. With M. Donatelli, C. Garoni, C. Manni, and H. Speleers. [DOI: 10.1007/s00791-015-0253-z].
150. “Spectral analysis of matrices in collocation methods with B-splines”, **Mathematics of Computation**, Vol. 85 (2016), pp. 1639–1680. With M. Donatelli, C. Garoni, C. Manni, and H. Speleers. [DOI: S0025-5718-2015-03027-0].
151. “Solving Systems of Nonlinear Equations when the Nonlinearity is Expensive”, **Computers and Mathematics with Applications**, Vol. 71, N.7 (2016), pp. 1464–1478. With S. Qasim, Z. Ali, F. Ahmad, M.Z. Ullah, and

- A. Mahmood.  
[DOI: 10.1016/j.camwa.2016.02.018].
152. “Multigrid methods for cubic spline solution of two points (and 2D) boundary value problems”, **Applied Numerical Mathematics**, Vol. 104 (2016), pp. 15–29. With M. Donatelli, M. Molteni, and V. Pennati.  
[DOI: 10.1016/j.apnum.2014.04.004].
  153. “A family of iterative methods for solving systems of nonlinear equations having unknown multiplicity”, **Algorithms** Vol. 9, N.5 (2016). With F. Ahmad, M.Z. Ullah, and A.S. Al Fhaid.  
[DOI: 10.3390/a9010005].
  154. “Preconditioned HSS method for large multilevel block Toeplitz linear systems via the notion of matrix-valued symbol”, **Numerical Linear Algebra with Applications**, Vol. 23, N.1 (2016), pp. 83–119. With M. Donatelli, C. Garoni, M. Mazza, and D. Sesana.  
[DOI: 10.1002/nla.2007].
  155. “Optimal preconditioning for image deblurring with Anti-Reflective boundary conditions”, **Linear Algebra and its Applications**, Vol. 502 (2016), pp. 159–185. With P. Dell’Acqua, M. Donatelli, D. Sesana, and C. Tablino Possio.
  156. “Constructing Frozen Jacobian Iterative Methods for solving Systems of Nonlinear Equations, associated with ODEs and PDEs using the Homotopy Method”, **Algorithms**, Vol. 9, N.18 (2016). With U. Qasim, Z. Ali, F. Ahmad, M.Z. Ullah, and M. Asma.  
[DOI: 10.3390/a9010018].
  157. “Spectral analysis of coupled PDEs and of their Schur complements via the notion of Generalized Locally Toeplitz sequences”, **Computer Methods in Applied Mechanics and Engineering**. Vol. 309 (2016), pp. 74–105. With A. Dorostkar and M. Neytcheva. Technical Report, N. 8, January 2015, Department of Information Technology, Uppsala University.
  158. “The theory of Locally Toeplitz sequences: A review, an extension, and a few representative applications”, **Boletín de la Sociedad Matemática Mexicana** Vol. 22, N.2 (2016), pp. 529–565. With C. Garoni.  
[DOI: 10.1007/s40590-016-0088-8].
  159. “Lusin theorem, GLT sequences and matrix computations: an application to the spectral analysis of PDE discretization matrices”, **Journal of Mathematical Analysis and Applications**, Vol. 446, N.1 (2017), pp. 365–382. With C. Garoni, C. Manni, D. Sesana, and H. Speleers.
  160. “The theory of Generalized Locally Toeplitz sequences: a review, an extension, and a few representative applications”, **Operator Theory: Advances and Applications**, the Böttcher anniversary book, Vol. 259 (2017), pp. 353–394. With C. Garoni.

161. “ A Higher Order Multi-step Iterative Method for Computing the Numerical Solution of Systems of Nonlinear Equations Associated with Nonlinear PDEs and ODEs”, **Journal of Computational Analysis and applications**, Vol. 22-3 (2017), pp. 445–461. With M.Z. Ullah , F. Ahmad, A. Mahmood, and E.S. Al-Aidarous.
162. “Symbol-based construction and analysis of optimal/robust multigrid methods for B-splines Isogeometric Analysis”, **SIAM Journal on Numerical Analysis** Vol. 55, N.1 (2017), pp.31–62. With M. Donatelli, C. Garoni, C. Manni, and H. Speleers.
163. “Spectral analysis and spectral symbol of matrices in isogeometric Galerkin methods”, **Mathematics of Computation**, Vol. 86-305 (2017), pp. 1343–1373 ; With C. Garoni, C. Manni, D. Sesana, and H. Speleers. DOI S0025-5718-2016-03143-9. Technical Report, N. 5, January 2015, Department of Information Technology, Uppsala University.
164. “Higher Order Derivative-Free Iterative Methods with Memory for Systems of Nonlinear Equations”, **Applied Mathematics and Computation**, Vol. 314 (2017), pp. 199–211. With F. Ahmad, F. Soleymani and F. Khaksar Haghani.
165. “Optimizing a multigrid Runge-Kutta smoother for variable-coefficient convection-diffusion equations”, **Linear Algebra and its Applications**, Vol. 533 (2017) pp. 507–535; doi:10.1016/j.laa.2017.07.036. With D. Bertaccini, M. Donatelli and F. Durastante.
166. “Function-based block multigrid strategy for a two-dimensional linear elasticity-type problem”, **Computers and Mathematics with Applications**, Vol. 74 (2017) pp. 1015–1028; DOI information: 10.1016/j.camwa.2017.05.024; <http://www.sciencedirect.com/science/article/pii/S0898122117303292>. With M. Donatelli, A. Dorostkar, M. Mazza and M. Neytcheva. Preliminary version “A block multigrid strategy for two-dimensional coupled PDEs”, Technical Report, N. 1, January 2016, Department of Information Technology, Uppsala University.
167. “Exploration of Toeplitz-like matrices with unbounded symbols: not a purely academic journey”, **Mathematischeskii Sbornik**, Vol. 208-11 (2017); <http://mi.mathnet.ru/eng/msb8823>. With A. Böttcher and C. Garoni.
168. “Spectral distribution results beyond the algebra generated by variable - coefficient Toeplitz sequences: the GLT approach”, **Journal of Fourier Analysis and Applications** (2017); 10.1007/s00041-017-9525-y. With C. Garoni.
169. “Are the eigenvalues of banded symmetric Toeplitz matrices known in close form?”, **Experimental Mathematics** (2017); 10.1080/10586458.2017.1320241. With S.-E. Ekström and C. Garoni. Preliminary version “Eigenvalues of



banded symmetric Toeplitz matrices are known almost in close form?”, Technical Report, N. 17, September 2016, Department of Information Technology, Uppsala University, With S.-E. Ekström.

170. “Multigrid method for symmetric Toeplitz block tridiagonal matrix: Convergence analysis & applications”, **Journal of Scientific Computing** (2017); 10.1007/s10915-017-0480-1. With M. Chen and W. Deng.
171. “Generalized Newton Multi-step Iterative Methods GMN(p,m) for solving a System of Non-linear Equations”, **International Journal of Computer Mathematics** (2017); <http://dx.doi.org/10.1080/00207160.2017.1305108>. With S. Kouser, S. Ur Rehmana, F. Ahmad and M.Z. Ullah.
172. “Ground surface temperature reconstruction for the last 500 years obtained from permafrost temperatures observed in the Stelvio Share borehole, Italian Alps”, Forum of **The Climate of the Past** (2017); doi:10.5194/cp-2017-23. With M. Guglielmin, M. Donatelli and M. Semplice.
173. “Are the eigenvalues of preconditioned banded symmetric Toeplitz matrices known in almost closed form?”, **Numerical Algorithms** (2017); doi:10.1007/s11075-017-0404-z. With F. Ahmad, E.S. Al-Aidarous, D. Abdullah Alrehaili, S.-E. Ekström and I. Furci. Preliminary version in Technical Report, N. 12, June 2017, Department of Information Technology, Uppsala University.

#### Proceedings papers and contributions to Books

174. “Preconditioners for (high order) Elliptic problems”, Proc. *Second IMACS International Symposium on Iterative Methods in Linear Algebra* (Blagoevgrad (Bulgaria) June 17th–20th 1995), S.D. Margenov and P.S. Vassilevski Eds., pp. 342–353. With G. Fiorentino.
175. “Conditioning and solution, by means of preconditioned conjugate gradient methods of Hermitian (block) Toeplitz linear systems”, *invitation by Prof. R.H. Chan*, Proc. *SPIE: Advanced Signal Processing Algorithms, Architectures and Implementations VI* (San Diego - California (USA) July 9th–14th 1995), F. Luk Ed., pp. 326–337.
176. “Conditioning and solution, by means of multigrid methods of symmetric (block) Toeplitz linear systems”, *invitation by Prof. D. Bainov*, Proc. *Sixth International Colloquium on Differential Equations* (Plovdiv (Bulgaria) August 18th–23rd 1995), D. Bainov Ed. (VSP - 1996), pp. 249–256.
177. “A  $\tau$  algebra based multiiterative solver for (block) Toeplitz systems”, Proc. *Algebraic Multilevel Iteration Methods with Applications* (Nijmegen (The Netherlands) June 13th–15th 1996), O. Axelsson and B. Polman Eds., pp. 129–140. With G. Fiorentino.

178. “The effectiveness of the band-Toeplitz preconditioning: a survey”, *invitation by Prof. J. Nagy and by Prof. R. Plemmons*, Proc. *First Workshop on Numerical Analysis and Applications: symposium on “Computation in Image Reconstruction and Restoration”* (Rousse (Bulgaria) June 24th–27th 1996), L. Vulkov, J. Wasniewski, and P. Yalamov Eds., (*Lecture Notes in Computer Science*, Springer-Verlag - Vol. 1196 (1997), pp. 422–429).
179. “Asymptotic expansions for some classical operators and their use in approximation theory”, *invitation by Prof. D. Bainov*, Proc. *Seventh International Colloquium on Differential Equations* (Plovdiv (Bulgaria) August 18th–23rd 1996), D. Bainov Ed. (VSP - 1997), pp. 67–74. With F. Costabile and M.I. Gualtieri.
180. “Analysis of a degenerate Hopf bifurcation in a PID controlled CSTR”, *invitation by Prof. D. Bainov*, Proc. *Seventh International Colloquium on Differential Equations* (Plovdiv (Bulgaria) August 18th–23rd 1996), D. Bainov Ed. (VSP - 1997), pp. 371–379. With C. Tablino Possio.
181. “Multilevel Toeplitz matrices and approximation by matrix algebras”, *invitation by Prof. R. Plemmons*, Proc. *SPIE: Advanced Signal Processing Algorithms, Architectures and Implementations VIII* (San Diego - California (USA) July 17th–24th 1998), F. Luk Ed., pp. 393–404. With E. Tyrtshnikov.
182. “The approximation of continuous periodic functions by means of extrapolation techniques for the De La Vallée Poussin operator”, Proc. *Ninth International Colloquium on Differential Equations* (Plovdiv (Bulgaria) August 18th–23rd 1998), D. Bainov Ed. (VSP - 1999), pp. 99–106. With F. Costabile and M.I. Gualtieri.
183. “Preliminary remarks on preconditioning strategies for two dimensional collocation linear systems”, *invitation by Prof. D. Bini and by Prof. E. Tyrtshnikov*, Proc. *Second Workshop on “Large-Scale Scientific Computation”* (Sozopol (Bulgaria) June 2nd–6th 1999), Vieweg Notes on Numerical Fluid Mechanics 73, M. Griebel, S.D. Margenov, and P. Yalamov Eds., pp. 94–101. With C. Tablino Possio.
184. “Preliminary remarks on Multigrid Methods for circulant matrices”, Proc. *Second Workshop on Numerical Analysis and Applications: symposium on “Recent developments in structured matrices and applications”* (Rousse (Bulgaria) June 11th–15th 2000), L. Vulkov, J. Wasniewski, and P. Yalamov Eds., (*Lecture Notes in Computer Science*, Springer-Verlag - Vol. 1988 (2001), pp. 152–159). With C. Tablino Possio.
185. “Structured preconditioning of optimal preconditioners for 2D collocation linear systems”, on the book **Structured Matrices: Recent Developments in Theory and Computations**, D. Bini, E. Tyrtshnikov, and P. Yalamov Eds., Nova Science Publisher Inc. pp. 191–204 (*invitation by Prof. D. Bini*). With C. Tablino Possio.

186. “Application of multigrid techniques to image restoration problems”, Proc. *SPIE - Session: Advanced Signal Processing: Algorithms, Architectures, and Implementations XII*, Vol. 4791, (Seattle - Washington (USA) July 7th–11th 2002), F. Luk Ed., pp. 210–221. With R. Chan, M. Donatelli, and C. Tablino Possio.
187. “MGM Optimal convergence for certain (multilevel) structured linear systems”, Proc. *GAMM Annual Meeting 2003* (Abano Terme (Italy) March 24th–28th 2003) (**Proceedings in Applied Mathematics and Mechanics**, Vol. 3, N.1 (2003), pp. 543–544). With A. Aricò and M. Donatelli.
188. “Anti-reflective boundary conditions and 2D fast deblurring models”, Proc. *SPIE - Session: Advanced Signal Processing Algorithms, Architectures and Implementations XIII* (San Diego - California (USA) August 3rd–8th 2003), F. Luk Ed., pp. 380–389. With M. Donatelli, C. Estatico, J. Nagy, and L. Perrone.
189. “GOOGLE PageRanking problem: the model and the analysis”, *invitation by Prof. D. Szyld*, Proc. of *Web Information Retrieval and Linear Algebra Algorithms* (Schloss Dagstuhl - Wadern (Germany) February 11th–16th 2007), Dagstuhl-Seminar 07071, A. Frommer, M. W. Mahoney, and D. Szyld Eds.: <http://kathrin.dagstuhl.de/files/Materials/07/07071/07071.SerraCapizzanoStefano.Paper!.pdf>
190. “Frequency domain error-in-variable approach for two-channel SIMO system identification”, Proc. of *15th European Signal Processing Conference (Eusipco 2007)* (Poznan (Poland) September 3rd–7th 2007). With W. Bobillet, E. Grivel, and I. Serban.
191. “The Anti-Reflective Transform and Regularization by Filtering”, special volume **Numerical Linear Algebra in Signals, Systems, and Control (NLASSC)**, Springer Verlag, Series “Lecture Notes in Electrical Engineering” (2011), pp. 1–21. With A. Aricò, M. Donatelli, and J. Nagy.
192. “On the Treatment of Boundary Artifacts in Image Restoration”, Proc. of *International Conference on Matrix Methods and Operator Equations* (Moscow (Russia) July 22nd–28th 2007); special volume **Matrix methods: theory, algorithms, applications**, V. Olshevsky, E. Tyrtyshnikov Eds., to the Memory of Gene Golub, pp. 227–237. With M. Donatelli.
193. “Spectral analysis for radial basis function collocation matrices”, Proc. of the Conference *ENUMATH 2009*, Springer-Verlag, G. Kreiss, P. Lötstedt, A. Malqvist, M. Neytcheva Eds., pp. 237–244. With R. Cavoretto, A. De Rossi, and M. Donatelli.
194. “Schur complement matrix and its (elementwise) approximation: a spectral analysis based on GLT sequences”, Proc. of *The 10th International Conference on Large-Scale Scientific Computations* (Sozopol (Bulgaria) June 8th–12th 2015), *Lecture Notes in Computer Science*, Springer-Verlag - Vol. 9374

(2015), pp. 409–416. With A. Dorostkar and M. Neytcheva. Technical Report, N. 11, January 2015, Department of Information Technology, Uppsala University.

### Talks at International Conferences

195. “Preconditioning strategies for Hermitian Toeplitz systems with nondefinite generating functions”, for the annual *SIAM Conference* (San Diego - California (USA) July 25th–29th 1994).
196. “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).
197. “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)**.
198. “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)**.
199. “A  $\tau$  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).
200. “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)**.
201. “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)**.
202. “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)**.
203. “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).
204. “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.
205. “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).
206. “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).
207. “Multigrid methods for indefinite Toeplitz systems”, for the *Workshop on Toeplitz matrices* (Cortona (Italy) September 9th–12th 1996). With G. Fiorentino (speaker).
208. “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).
209. “Some unifying results on preconditioning in a matrix algebra”, for the Conference in (210). This communication is presented by F. Di Benedetto, in a more detailed form, in the Conferences in (211) and (213). With F. Di Benedetto (speaker).
210. “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)**.
211. “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)**.

212. “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).
213. “The approximation of Toeplitz matrices by a Weierstrass-Korovkin theorem”, for the *International Algebraic Conference dedicated to the memory of Prof. D. 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)**.
214. “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)**.
215. “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)**.
216. “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.
217. “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)**.
218. “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)**.
219. “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).
220. “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.

221. “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)**.
222. “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)**.
223. “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.
224. “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)**.
225. “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).
226. “Asymptotic zero distribution of orthogonal polynomials with discontinuously varying recurrence coefficients”, for the Conference *Algorithms for Approximation IV* (Huddersfield (UK) July 15th–20th 2001).
227. “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)**.
228. “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)**.
229. “Multigrid Methods for Multilevel Structures”, for the Conference *Numerical Algorithms 2001* in honor of Brezinski (Marrakesh (Morocco) October 1st–5th 2001).
230. “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).

231. “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.
232. “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).
233. “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.
234. “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)**.
235. “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.
236. “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.
237. “MGM optimal convergence for certain (multilevel) structured linear systems”, for the *GAMM Annual Meeting 2003* (Abano Terme (Italy) March 24th–28th 2003). With A. Aricò (speaker) and M. Donatelli.
238. “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.
239. “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.



240. “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).
241. “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).
242. “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).
243. “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).
244. “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**.
245. “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)**.
246. “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)**.
247. “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)**.
248. “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).
249. “Boundary conditions and fast deblurring models”, for the Workshop *Applied Computational Inverse Problems* (Florence (Italy) March 22nd–25th 2004). With M. Donatelli (speaker).
250. “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).

251. “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)**.
252. “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)**.
253. “Boundary conditions and fast deblurring models”, for the Conference *Structured Numerical Linear Algebra Problems: Algorithms and Applications* (Cortona (Italy) September 19th–24th 2004).
254. “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).
255. “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.
256. “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).
257. “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)**.
258. “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.
259. “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.
260. “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)**.
261. “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)**.

262. “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).
263. “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.
264. “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).
265. “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).
266. “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).
267. “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.
268. “On the regularizing power of multigrid-type algorithms”, for the Conference *EMG05* (Scheveningen (The Netherlands) September 27th–30th 2005). With M. Donatelli (speaker).
269. “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.
270. “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)**.
271. “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).
272. “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.

273. “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.
274. “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)**.
275. “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)**.
276. “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.
277. “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).
278. “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.
279. “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.
280. “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.
281. “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).
282. “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.
283. “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)**.
284. “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 (Ukraine) April 14th–19th 2007). With L. Golinskii (speaker).
285. “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).
286. “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)**.
287. “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)**.
288. “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).
289. “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.
290. “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.
291. “Une caractérisation du spectre d’un produit d’opérateurs de Toeplitz”, for the Conference *Functional and Harmonic Analysis* (Luminy (France) November 19th–22nd 2007). With D. Sesana and E. Strouse (speaker).
292. “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.
293. “Matrix analysis and GOOGLE’s pagerank”, for the Conference in honor of the 65 years of Manfred Tasche (Hasenwinkel (Germany) June 6th 2008).

294. “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).
295. “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.
296. “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.
297. “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)**.
298. “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.
299. “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).
300. “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).
301. “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)**.
302. “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)**.
303. “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).
304. “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.
305. “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).
306. “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).
307. “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 Scazza (S. Margherita di Pula (Italy) October 10th–14th 2011).
308. “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)**.
309. “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).
310. “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)**.
311. “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.
312. “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)**.

313. “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.
314. “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.
315. “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.
316. “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 Cornelis van der Mees 60th birthday* (Cagliari (Italy) September 2nd–5th 2013). With C. Garoni.
317. “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.
318. “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).
319. “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).
320. “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).
321. “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.
322. “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)**.
323. “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.
  324. “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.
  325. “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).
  326. “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)**.
  327. “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.
  328. “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).
  329. “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.
  330. “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 70th birthday of Prof. Francesco Costabile. With C. Garoni (speaker), T.J.R. Hughes, A. Reali, and H. Speleers.
  331. “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 70th birthday of Prof. Francesco Costabile. With C. Garoni, C. Manni, D. Sesana, and H. Speleers (speaker).

332. “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)**.
333. “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)**.
334. “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).
335. “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)**.
336. “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)**.
337. “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**.
338. “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**.
339. “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.

340. “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 (MAFE-LAP 2016)* (London (UK) 14th–17th June 2016), **invitation by Proff H. Speleers e C. Manni - U. ROMA II.**
341. “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.**
342. “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.**
343. “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.
344. “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).
345. “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).
346. “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.
347. “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).**
348. “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.

349. “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.
350. “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).
351. “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).
352. “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.
353. “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. Speelers.
354. “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.
355. “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).
356. “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.
357. “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).
358. “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).
359. “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 (speaker), A. Ratnani, H. Speleers.

#### National Conferences

360. “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.
361. “Risultati spettrali di distribuzione e localizzazione per matrici precondizionate di Toeplitz”, *long lecture*, for the *XV Congresso dell’Unione Matematica Italiana* (Padova (Italy) September 11th–16th 1995).
362. “Approssimazione costruttiva di successioni di matrici”, for the *XVI Congresso dell’Unione Matematica Italiana* (Naples (Italy) September 13th–18th 1999).
363. “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.
364. “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).
365. “Strutture, Strutture nascoste, Algoritmi e Applicazioni”, plenary (50 minutes) for the *Congresso GNCS 2008* (Montecatini (Italy) February 3rd–5th 2008), **invitation by Prof. A. Bellen - Head GNCS**.
366. “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**.