

# Maria Carmela De Bonis

## Curriculum Vitae et Studiorum

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### Istruzione e Formazione

- 01/02/1995 Laurea in Matematica presso l'Università degli Studi della Basilicata, Potenza  
*Titolo della Tesi:* Sul Calcolo Numerico della Trasformata di Hilbert  
Relatore: Prof. Giuseppe Mastroianni
- 01/03/1995–14/02/1996 Borsa di studio del C.N.R. presso l'Università degli Studi della Basilicata, Potenza  
Tutor: Prof. Giuseppe Mastroianni
- 31/03/2004 Laurea triennale in Informatica presso l'Università degli Studi della Basilicata, Potenza  
*Titolo della Tesi:* Un Software per la risoluzione approssimata di Equazioni Integrali di Fredholm  
Relatore: Prof. Giuseppe Mastroianni
- 02/03/2011 Dottorato di Ricerca Internazionale in Matematica "Janos Bolyai" presso l'Università degli Studi della Basilicata, Potenza  
*Titolo della Tesi:* Numerical methods for systems of Integral equations  
Relatore: Prof. Giuseppe Mastroianni

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### Esperienze Professionali

- 01/09/1997–30/09/2004 Collaboratore Tecnico (Posizione economica D2) presso il Laboratorio Numerico del Dipartimento di Matematica dell'Università degli Studi della Basilicata
- 01/10/2004–05/06/2012 Ricercatore in Analisi Numerica (MAT/08) presso la Facoltà di Scienze MM.FF.NN. dell'Università degli Studi della Basilicata
- dal 06/06/2012 Ricercatore in Analisi Numerica (MAT/08) presso il Dipartimento di Matematica, Informatica ed Economia dell'Università degli Studi della Basilicata
- dal 29/11/2013 Rappresentante dell'Area 01 nella Commissione per la Ricerca dell'Università degli Studi della Basilicata
- dal 19/11/2015 Membro della Commissione di Ricerca del Dipartimento di Matematica, Informatica ed Economia
- 28/11/2011–30/03/2015 Membro del Collegio dei Docenti del Dottorato di Ricerca Internazionale "Matematica e Informatica Pitagora di Samo" dell'Università degli Studi della Basilicata
- 29/07/2013–12/05/2017 Membro del Collegio dei Docenti del Dottorato di Ricerca "Matematica ed Informatica" dell'Università del Salento e dell'Università degli Studi della Basilicata
- dal 2016 Responsabile dell'Orientamento per i Corsi di Laurea in Matematica
- dal 01/01/2001 Membro del Gruppo Nazionale per il Calcolo Scientifico dell'Istituto di Alta Matematica (INdAM-GNCS)
- dal 27/11/2016 Membro della Rete ITaliana di Approssimazione (RITA)
- dal 31/08/2018 Abilitazione Scientifica Nazionale al ruolo di Professore di II fascia

## Attività Didattica

### **Titolare per affidamento dei seguenti corsi:**

- a.a. 2007/2008 Abilità Informatiche II (6 CFU), Corso di Laurea in Matematica  
Calcolo Numerico (4 CFU), Corso di Laurea in Ingegneria Meccanica  
Laboratorio di Calcolo Numerico (6 CFU), Corso di Laurea Specialistica in Matematica e Corso di Laurea Specialistica in Informatica
- a.a. 2008/2009 Laboratorio di Calcolo Numerico (6 CFU), Corso di Laurea Specialistica in Matematica e Corso di Laurea Specialistica in Informatica
- a.a. 2009/2010 Laboratorio di Calcolo Numerico (6 CFU), Corso di Laurea Specialistica in Matematica  
Metodologie Informatiche per la Chimica (6 CFU), Corso di Laurea in Chimica
- a.a. 2010/2011 Complementi di Analisi Numerica (6 CFU), Corso di Laurea e Corso di Laurea Specialistica in Matematica
- a.a. 2011/2012 Trattamento Numerico di Equazioni Funzionali (6 CFU), Corso di Laurea Magistrale in Matematica  
Complementi di Analisi Numerica (6 CFU), Corso di Laurea in Matematica
- a.a. 2012/2013 Calcolo Scientifico (6 CFU), Corso di Laurea Triennale in Informatica  
Complementi di Analisi Numerica (6 CFU), Corso di Laurea in Matematica
- a.a. 2013/2014 Matematica per la Chimica (6 CFU), Corso di Laurea in Chimica
- a.a. 2014/2015 Matematica per la Chimica (6 CFU), Corso di Laurea in Chimica  
Complementi di Analisi Numerica (6 CFU), Corso di Laurea in Matematica
- a.a. 2015/2016 Analisi Numerica - Modulo A (6 CFU), Corso di Laurea in Matematica  
Metodi dell'Analisi Numerica - Modulo B (6 CFU), Corso di Laurea Magistrale in Matematica
- a.a. 2016/2017 Calcolo Scientifico - Modulo A (6 CFU), Corso di Laurea in Matematica  
Metodi dell'Analisi Numerica - Modulo B (6 CFU), Corso di Laurea Magistrale in Matematica
- a.a. 2017/2018 Calcolo Scientifico - Modulo A (6 CFU), Corso di Laurea in Matematica  
Metodi dell'Analisi Numerica - Modulo B (6 CFU), Corso di Laurea Magistrale in Matematica
- a.a. 2018/2019 Calcolo Scientifico - Modulo A (6 CFU), Corso di Laurea in Matematica  
Metodi dell'Analisi Numerica - Modulo A (6 CFU), Corso di Laurea Magistrale in Matematica  
Metodi dell'Analisi Numerica - Modulo B (6 CFU), Corso di Laurea Magistrale in Matematica
- a.a. 2019/2020 Calcolo Scientifico - Modulo A (6 CFU), Corso di Laurea in Matematica  
Metodi dell'Analisi Numerica - Modulo B (6 CFU), Corso di Laurea Magistrale in Matematica

### **Titolare del seguente insegnamento per il Dottorato di Ricerca in Matematica ed Informatica:**

- a.a. 2013/2014 Trattamento numerico di equazioni differenziali (15 ore), ciclo XXIX

### **Esperto esterno per i seguenti Laboratori all'interno del Programma Lauree Scientifiche (PLS):**

- a.a. 2013/2014 Matematica al calcolatore, presso il Liceo Scientifico Statale "E. Fermi" di Policoro (MT)  
Matematica al calcolatore, presso il Liceo Scientifico Statale "G. Fortunato" di Rionero (PZ)
- a.a. 2015/2016 Matematica al calcolatore, presso il Liceo Scientifico Statale "E. Fermi" di Policoro (MT)
- a.a. 2016/2017 Matematica al calcolatore, presso l'I.I.S. "Francesco Saverio Nitti" di Potenza
- a.a. 2017/2018 Laboratorio di Programmazione per il Calcolo Scientifico, presso l'I.I.S. "Einstein - De Lorenzo" di Potenza

### **Refente per i seguenti Moduli del Liceo Matematico:**

- a.a. 2018/2019 Matematica e Informatica, presso il Liceo Scientifico Statale "Pier Paolo Pasolini" di Potenza  
Matematica e Informatica, presso il Liceo Scientifico Statale "Federico II Di Svevia" di Melfi  
Matematica e Informatica, presso il Liceo Scientifico Statale "Pomponio Leto" di Teggiano (SA)
- a.a. 2019/2020 Matematica e Informatica, presso il Liceo Scientifico Statale "Pier Paolo Pasolini" di Potenza

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## Attività Scientifica

### Partecipazione a Progetti di Ricerca e Finanziamenti

- 1997 Weighted polynomial approximation on infinite and semi-infinite intervals, Progetto Bilaterale Italia-Ungheria del Centro Nazionale di Ricerca (C.N.R.), "S & T cooperation program and the Hungarian National Science Foundation", Responsabili: Prof. G. Mastroianni e Prof J. Szabados
- 1999-2000 Trattamento analitico e numerico di equazioni funzionali, Progetto finanziato dal MIUR, Responsabile Prof. G. Mastroianni
- 2002 Trattamento numerico di equazioni integrali e connessi problemi di quadratura ed algebra lineare, Progetto finanziato dal MIUR (ex 60%), Responsabile Prof. G. Mastroianni
- 2002-2003 Approssimazione di Operatori ed Equazioni Integrali, Progetto finanziato dal MIUR, Responsabile Prof. G. Mastroianni
- 2003 Metodi Numerici per Equazioni Integrali, Progetto GNCS (INDAM), Responsabile Prof. Giuseppe Mastroianni
- 2004 Trattamento numerico di equazioni integrali e connessi problemi di algebra lineare numerica, Progetto finanziato da fondi locali (RIL) dell'Università degli Studi della Basilicata
- 2004 Trattamento numerico di equazioni integrali singolari e connessi problemi di approssimazione e quadratura, Progetto GNCS, Responsabile Prof. G. Mastroianni

- 2005 Proprietà di Mappa di Operatori integrali singolari, Progetto finanziato da fondi locali (RIL) dell'Università degli Studi della Basilicata
- 2005 Trattamento numerico di equazioni integrali singolari e connessi problemi di approssimazione e algebra lineare numerica, Progetto GNCS, Responsabile Prof. G. Mastroianni
- 2007-2008 Metodo numerici per il trattamento numerico di equazioni integrali su intervalli limitati, Progetto finanziato da fondi locali (RIL) dell'Università degli Studi della Basilicata
- 2007-2008 Equazioni integrali con nucleo strutturato e applicazioni, Progetto PRIN 2006, Responsabile Prof. D. Bini
- 2009-2010 Trattamento numerico di sistemi di equazioni integrali, Progetto finanziato da fondi locali (RIL) dell'Università degli Studi della Basilicata
- 2010-2012 Equazioni integrali con struttura e sistemi lineari, Progetto PRIN 2008, Responsabile Prof. D. Bini
- 2011 Tecniche numeriche per problemi di propagazione di onde elastiche in multidomini, Progetto GNCS, Responsabile Prof.ssa A. Aimi
- 2013-2018 Equazioni integrali e approssimazione polinomiale pesata in domini di  $R^2$ , Progetto finanziato da fondi locali (RIL) dell'Università degli Studi della Basilicata
- 2013 Metodi fast per la risoluzione numerica di sistemi di equazioni integro-differenziali, Progetto GNCS, Responsabile Prof.ssa A. Aimi
- 2016 Integrazione numerica di problemi singolari e di evoluzione con basi non standard, Progetto GNCS, Responsabile Prof.ssa D. Conte
- 2017 Fondo di Finanziamento per le Attività Base di Ricerca (FFABR) (art. 1, commi 295 e seguenti, della Legge 11 dicembre 2016)
- 2018 Metodi, algoritmi e applicazioni dell'approssimazione multivariata, Progetto GNCS, Responsabile Prof.ssa A. De Rossi
- 2019 Discretizzazione di misure, approssimazione di operatori integrali ed applicazioni, Progetto GNCS, Responsabile Prof.ssa D. Occorsio
- 2020-2021 Approssimazione multivariata ed equazioni funzionali per la modellistica numerica, Progetto GNCS, Responsabile Prof.ssa E. Francomano

### Attività Organizzativa

- 24-30/09/2009 Membro del Comitato Organizzativo del Convegno Internazionale "6-th Conference in Functional Analysis and Approximation Theory", Acquafredda di Maratea (Potenza)
- 12-13/09/2013 Membro del Comitato Organizzativo del Convegno Internazionale "International Workshop on Approximation Theory and Applications" dedicated to Giuseppe Mastroianni on the occasion of his retirement, Rifreddo (Potenza)

### Attività di refereing

Applied Mathematics and Computations  
 Journal of Computation and Applied Mathematics  
 Mathematical and Computer Modelling  
 Computers & Mathematics with Applications

Journal of Integral Equations & Applications  
Applied Numerical Mathematics  
Acta Applicandae Mathematicae  
Alexandria Engineering Journal  
Applied Mathematical Modelling  
Communications in Nonlinear Science and Numerical Simulations  
Indian Journal of Pure and Applied Mathematics  
International Journal of Computer Mathematics  
Linear and Multilinear Algebra

### Attività di reviewer

Mathematical Reviews (MATHSCINET) dell'American Mathematical Society (AMS)

### Visite presso istituti di ricerca stranieri

- 08/10/2003-18/10/2003 Ospite presso l'Università di Nis, Serbia. Durante questo soggiorno ha collaborato con il gruppo di ricerca del Prof. G. Milovanovic sull'argomento di ricerca "Numerical Methods for Fredholm Integral Equations of the First Kind"
- 26/11/2004-03/12/2004 Ospite presso l'Università di Nis, Serbia. Durante questo soggiorno ha collaborato con il gruppo di ricerca del Prof. G. Milovanovic sull'argomento di ricerca "Numerical Methods for Fredholm Integral Equations of the First Kind"
- 4/07/2008-14/09/2008 Ospite presso il Mathematical Institute of Serbian Academy of Sciences and Arts (SASA) di Belgrado, Serbia. Durante questo soggiorno ha lavorato sul Progetto di Ricerca dal titolo "Interpolation and Quadrature Processes Based on the Theory of Orthogonality", in particolare sull'argomento di ricerca "Orthogonal Polynomials and Quadrature Rules", Coordinatore Prof. G. Milovanovic
- 15/07/2009-20/09/2009 Ospite presso il Mathematical Institute of Serbian Academy of Sciences and Arts (SASA) di Belgrado, Serbia. Durante questo soggiorno ha lavorato sul Progetto di Ricerca dal titolo "Interpolation and Quadrature Processes Based on the Theory of Orthogonality", in particolare sull'argomento di ricerca "Orthogonal Polynomials and Quadrature Rules", Coordinatore Prof. G. Milovanovic
- 01/08/2010-30/09/2010 Ospite presso il Mathematical Institute of Serbian Academy of Sciences and Arts (SASA) di Belgrado, Serbia. Durante questo soggiorno ha lavorato sul Progetto di Ricerca dal titolo "Interpolation and Quadrature Processes Based on the Theory of Orthogonality", in particolare sull'argomento di ricerca "Quadrature Rules and Integral Equations", Coordinatore Prof. G. Milovanovic
- 22-27/09/2015 Ospite presso il Dipartimento di Matematica della North-West University, Potchefstroom, Sud Africa. Durante questo soggiorno ha collaborato con il Prof. David Kubayi
- 04/03/2018-10/03/2018 Professore visitatore presso la Facoltà di Scienze dell'Università di Kragujevac. Durante la visita ha tenuto 3 ore di lezione per il corso "Numerical analysis 2" della Laurea Magistrale in Matematica e ha collaborato con la Prof.ssa Marija Stanic

## Contributi a Convegni Internazionali e Nazionali

### Relatrice della seguente comunicazione plenaria:

- 23–26/09/2015 M.C. De Bonis: Weighted polynomial approximation and mapping properties of singular integral operators, NWU-PUK Mathematics Workshop on Functional Analysis and its Applications, North-West University, Potchefstroom, South Africa

### Relatrice su invito delle seguenti comunicazioni:

- 18–24/11/2001 M.C. De Bonis, G. Mastroianni: Some simple Quadrature Rules to evaluate the Hilbert Transform on the Real Line, Meeting on Numerical Integration and its Complexity, Oberwolfack, Germany
- 10/10/2003 M.C. De Bonis, G. Mastroianni: Projection methods for CSIE on finite interval, Workshop on Applied Orthogonal Systems, Constructive Approximation and Numerical Methods, Kragujevac, Serbia
- 23–26/09/2010 M.C. De Bonis, G. Mastroianni: A numerical method for systems of Fredholm integral equations on the real line, Second International Conference on Numerical Analysis and Approximation Theory, Cluj-Napoca, Romany
- 25–28/06/2012 M.C. De Bonis, G. Mastroianni: Direct methods for CSIE in weighted Zygmund spaces with uniform norm, Congresso SIMAI, Torino, Italy
- 8-13/09/2016 M.C. De Bonis, D. Occorsio: Approximation of hypersingular integral transforms on the real axis, 4-th Dolomites Workshop on Constructive Approximation and Applications (DWCAA16), Alba di Canazei, Italy
- 2-6/07/2018 M.C. De Bonis, D. Occorsio: A product quadrature rule for Hadamard finite-part integrals on the finite semiaxis, XIV Biennial Conference of the Italian Society of Applied and Industrial Mathematics (SIMAI), Rome, Italy
- 8-13/07/2018 M.C. De Bonis, C. Laurita: On the numerical solution of integral equations with fixed singularities of Mellin type in weighted uniform spaces, IX Jaen Conference on Approximation Theory, Ubeda, Jaen, Spain
- 27-29/05/2019 M.C. De Bonis, C. Laurita: A Quadrature method for Cauchy singular integral equations with additional fixed singularities of Mellin type, Recent Advances in Scientific Computation (ETNA25), Santa Margherita di Pula, Italy
- 4-6/09/2019 M.C. De Bonis, D. Occorsio: Weighted polynomial approximation in the numerical resolution of integro-differential equations of Prandtl's type, XXI Congresso dell'Unione Matematica Italiana - Sezione S11: Teoria dell'approssimazione ed applicazioni, Pavia

### Relatrice delle seguenti comunicazioni:

- 9-12/09/1997 M.C. De Bonis, B. Della Vecchia, G. Mastroianni: Approximation of the Weighted Hilbert Transform on the real line, International Workshop on Approximation Theory and Numerical Analysis, Vico Equense (Naples), Italy
- 27/07/1998–01/08/1998 M.C. De Bonis, B. Della Vecchia, G. Mastroianni: Approximation of the Hilbert Transform on the real axes using Hermite zeros, International Congress on Computational and Applied Mathematics, Leuven, Belgium
- 9-12/05/1999 M.C. De Bonis, M.G. Russo: Approximation of the Weighted Hilbert Transform, Workshop on Advanced Special Functions and Applications, Melfi (Potenza), Italy

- 9-14/08/1999 M.C. De Bonis, G. Mastroianni, M. Viggiano: Best Approximation and Moduli of Smoothness on the semiaxis , Functions, Series, Operators. Alexits Memorial Conference, Budapest, Hungary
- 31/08/1999-01/09/1999 M.C. De Bonis, B. Della Vecchia, G. Mastroianni: Best Approximation on the semiaxis and some applications , Meeting on Approximation Theory and Numerical Analysis, Vico Equense (Naples), Italy
- 18-23/06/2000 M.C. De Bonis, B. Della Vecchia, G. Mastroianni: Some Integration Rules on the real semiaxis, 2nd Workshop on Advanced Special Functions and Integration Methods, Melfi (Potenza), Italy
- 17-21/07/2000 M.C. De Bonis, B. Della Vecchia, G. Mastroianni: Approximation of the Hilbert Transform on the Real Semiaxis using Laguerre zeros, Ninth International Congress on Computational and Applied Mathematics, Leuven, Belgium
- 16-20/09/2000 M.C. De Bonis, G. Mastroianni: Numerical Problems in the Evaluation of the Hilbert Transform, Workshop on Quadrature and Numerical Methods for integral equations, Riferdo (Potenza), Italy
- 18-22/06/2001 M.C. De Bonis, G. Mastroianni: Numerical Evaluation of the Hilbert Transform on the real axes, Sixth International Symposium on Orthogonal Polynomials, Special Functions and Applications, Lido di Ostia (Rome), Italy
- 22-26/07/2002 M.C. De Bonis, C. Frammartino, G. Mastroianni: Numerical methods for some special Fredholm integral equations on the Real line, Tenth International Congress on Computational and Applied Mathematics, Leuven, Belgium
- 13-16/06/2003 M.C. De Bonis, M.C. Russo: Interpolation of functions having inner singularity in  $[-1,1]$ , IV Encuentro Internacional de Aproximacion de la Universidad de Jaen, Ubeda, Spain
- 24-27/06/2003 M.C. De Bonis, G. Mastroianni: Nyström and projection methods for CSIE on finite interval, IWOTA 2003, Cagliari, Italy
- 9-14/06/2004 M.C. De Bonis, G. Mastroianni: Polynomial approximation of the solutions of Cauchy Singular Integral Equations, V Encuentro Internacional de Aproximacion de la Universidad de Jaen, Ubeda, Spain
- 16-23/06/2004 M.C. De Bonis, G. Mastroianni: Numerical Methods for CSIE in  $[-1,1]$ , 5th International Conference on Functional Analysis and Approximation Theory, Acquafredda di Maratea (Potenza), Italy
- 27-28/09/2007 M.C. De Bonis, G. Mastroianni: Un Metodo di Nyström per sistemi di equazioni di Fredholm sulla semiretta reale, Equazioni integrali: recenti sviluppi numerici e nuove applicazioni, Parma, Italy
- 25-29/08/2008 M.C. De Bonis, G. Mastroianni: Nyström Method for systems of Fredholm integral equations on the real semiaxis, Approximation & Computation, Conference dedicated to Prof. Gradimir V. Milovanovic on the occasion of his 60-th anniversary, Nis, Serbia
- 24-28/05/2009 M.C. De Bonis, C. Laurita, G. Mastroianni: Nyström Method for Fredholm integral equations on bounded intervals via orthogonal polynomials, 4-th Workshop Advanced Special Functions and solution of PDEs, Sabaudia, Italy
- 24-30/09/2009 M.C. De Bonis: Quadrature Rules for high-oscillatory and periodic functions, 6-th International Conference on Functional Analysis and Approximation Theory, Acquafredda di Maratea, Italy

- 5-9/10/2009 M.C. De Bonis, G. Mastroianni: Nyström Method for systems of Fredholm integral equations on the real axis, Workshop on Advances and Trends in Integral Equations. Dedicated to the memory of Siegfried Prössdorf, Chemnitz, Germany
- 29-30/10/2009 M.C. De Bonis, G. Mastroianni: Numerical treatment of systems of Fredholm integral equations on the real axis, Workshop on Integral Equations: recent numerical developments and new applications, Parma, Italy
- 29/03/2011-01/04/2011 M.C. De Bonis, C. Laurita: Numerical treatment of systems of Cauchy singular integral equations, Workshop on Functional Analysis and Operator Theory, Dedicated to Bernd Silbermann on his 70th birthday, Altenberg, Germany
- 9-13/07/2012 M.C. De Bonis, G. Mastroianni: Numerical treatment of systems of Fredholm integral equations on unbounded intervals, International Congress on Computational and Applied Mathematics (ICCAM), Gent, Belgium
- 25-28/06/2013 M.C. De Bonis: Remarks on two integral operators and numerical methods for Cauchy singular integral equations, 25th Biennial Conference on Numerical Analysis, Glasgow, UK
- 2-5/09/2014 M.C. De Bonis, D. Occorsio: Numerical evaluation of hypersingular integrals on the semiaxis, 6th International Conference on Numerical Analysis, Chania, Crete, Greece
- 22-24/10/2015 M.C. De Bonis, C. Laurita: A Nyström method for integral equations with fixed singularities of Mellin type in weighted  $L^p$  spaces, The Fifth International Workshop on Analysis and Numerical Approximation of Singular Problems (IWANASP 2015), Lagos, Portugal
- 30/11/2017-02/12/2017 M.C. De Bonis, D. Occorsio: On a quadrature method for Prandtl's integro-differential equations in weighted Zygmund spaces with uniform norm, Acta 2017: Approximation and Computation - Theory and Applications, Belgrade, Serbia
- 16-19/05/2018 M.C. De Bonis, M.P. Stanic, T.V. Tomovic: A Nyström method for approximating the solutions of an integral equation arising from a problem in mathematical biology, SMAK 2018: 14th Serbian Mathematical Congress, Kragujevac
- 3-7/09/2018 M.C. De Bonis, D. Occorsio: A quadrature method for a singular integro-differential equation in weighted Zygmund spaces with uniform norm, IWANASP18: International Workshop on Analysis and Numerical Approximation of Singular Problems, Cagliari, Italy
- 16-18/01/2020 M.C. De Bonis, C. Laurita: Numerical solution of Cauchy singular integral equations with additional fixed singularities of Mellin convolution type, MATA 2020, Perugia, Italy

#### Poster

- 08/09/2014–12/09/2014 M.C. De Bonis, C. Laurita: A Nyström method for integral equations with Mellin type kernels, Dolomites Research Week on Approximation, Alba di Canazei, Trento
- 18/06/2015–21/06/2015 M.C. De Bonis, D. Occorsio: A method to approximate Hadamard Finite part transforms on the positive semiaxis, New Trends in Numerical Analysis: Theory, Methods, Algorithms and Applications, Falerna, Catanzaro



## Elenco delle Pubblicazioni

1. De Bonis, M.C.: An algorithm for the evaluation of two-dimensional Hilbert transform. *Journal of Electrotechnics and Mathematics (Pristina)*, 4 (1999), 1-34.
2. De Bonis, M.C.: An algorithm for the evaluation of two-dimensional Hilbert transform with non-standard weight functions. *Facta Universitatis (Nis), Ser. Math. Inform.* 14 (1999), no. 14, 109-134.
3. De Bonis, M.C., Russo, M.G.: Computation of the Cauchy principal value integrals on the real line. *Proceedings of the "Workshop on Advanced Special Functions and Applications", Melfi (PZ), Italy, 9-12 May 1999*, eds. D. Cocolicchio, G. Dattoli and H.M. Srivastava (ARACNE, Rome) 2000, 197-210.
4. De Bonis, M.C., Della Vecchia, B., Mastroianni, G.: Approximation of the Hilbert transform on the real line using Hermite zeros. *Mathematics of Computation*, 71 (2002), no. 239, 1169-1188. doi:10.1090/S0025-5718-01-01338-2
5. De Bonis, M.C., Della Vecchia, B., Mastroianni, G.: Approximation of the Hilbert transform on the real semiaxis using Laguerre zeros. *Proceedings of the 9th International Congress on Computational and Applied Mathematics (Leuven, 2000)*, *Journal of Computation and Applied Mathematics*, 140 (2002), no. 1-2, 209-229. doi: 10.1016/S0377-0427(01)00529-5.
6. De Bonis, M.C., Mastroianni, G., Viggiano, M.: K-functionals, Moduli of Smoothness and Weighted Best Approximation on the semiaxis. *Functions, Series, Operators (L. Leindler, F. Schipp, J. Szabados, eds.) Janos Bolyai Mathematical Society, Budapest, Hungary, Alexits Memorial Conference (2002)*, 181-211.
7. De Bonis M.C., Mastroianni G., Russo M.G.: Polynomial approximation with special doubling weights. *Acta Scientiarum Mathematicarum (Szeged)*, 69 (2003), no. 1-2, 159-184.
8. De Bonis, M.C., Mastroianni, G.: Some simple quadrature rules for evaluating the Hilbert transform on the real line. *Archives of Inequalities and Applications*, 1 (2003), no. 3-4, 475-494.
9. De Bonis, M.C., Frammartino, C., Mastroianni, G.: Numerical methods for some special Fredholm integral equations on the real line. *Proceedings of the 10th International Congress on Computational and Applied Mathematics (ICCAM-2002)*, *Journal of Computation and Applied Mathematics*, 164/165, (2004), 225-243. doi: 10.1016/S0377-0427(03)00652-6.
10. Cvetkovic, A., De Bonis, M.C.: Projection methods for Cauchy singular integral equations on the bounded intervals. *Facta Universitatis (Nis), Ser. Math. Inform., Special Issue dedicated to Prof. Giuseppe Mastroianni for his 65th birthday*, 19 (2004), 123-144.
11. De Bonis, M.C., Mastroianni, G.: Mapping properties of some singular operators in Besov type subspaces of  $C(-1, 1)$ . *Integral Equations Operator Theory*, 55 (2006), no. 3, 387-413. doi: 10.1007/s00020-005-1396-y.
12. De Bonis, M.C., Mastroianni, G.: Projection methods and condition numbers in uniform norm for Fredholm and Cauchy singular integral equations. *SIAM Journal on Numerical Analysis*, 44 (2006), no. 4, 1351-1374. doi: 10.1137/050626934.
13. De Bonis, M.C., Laurita, C.: Numerical treatment of second kind Fredholm integral equations systems on bounded intervals. *Journal of Computational and Applied Mathematics*, 217 (2008), no. 1, 64-87. doi: 10.1016/j.cam.2007.06.014.
14. De Bonis, M.C., Laurita, C.: Nyström methods for Cauchy singular integral equations. A survey, *Rivista di Matematica dell'Università di Parma (7)*, 8 (2008), 139-169.
15. De Bonis, M.C., Mastroianni, G.: Nyström method for systems of integral equations on the real semiaxis. *IMA Journal of Numerical Analysis*, 29 (2009), no. 3, 632-650. doi: 10.1093/imanum/drn035.
16. De Bonis, M.C., Laurita, C.: Nyström method for Cauchy Singular Integral Equations with negative index. *Journal of Computational and Applied Mathematics*, 232 (2009), no. 2, 523-538. doi: 10.1016/j.cam.2009.06.028.
17. De Bonis, M.C., Pastore, P.: A quadrature formula for integrals of highly oscillatory functions. *Rendiconti del Circolo di Matematico di Palermo Serie II, Suppl.* 82 (2010), 279-303
18. De Bonis, M.C., Mastroianni, G.: Direct methods for CSIE in weighted Zygmund spaces with uniform norm. *Rivista di Matematica dell'Università di Parma, Vol. 2* (2011), 29-55
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21. De Bonis, M.C., Laurita, C.: Numerical solution of systems of Cauchy singular integral equations with constant coefficients. *Applied Mathematics and Computation*, 219 (2012), no. 4, 1391-1410. doi: 10.1016/j.amc.2012.08.022.
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23. De Bonis, M.C., Mastroianni, G.: Numerical Treatment of a class of systems of Fredholm integral equations on the real line. *Mathematics of Computation*, 83 (2014), no. 286, 771-788. doi: 10.1090/S0025-5718-2013-02727-5.
24. De Bonis, M.C., Laurita, C.: A modified Nyström method for integral equations with Mellin type kernels. *Journal of Computational and Applied Mathematics*, 296 (2016), 512-527. doi: 10.1016/j.cam.2015.10.010.
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26. De Bonis, M.C., Occorsio, D.: On the simultaneous approximation of a Hilbert transform and its derivatives on the real semiaxis. *Applied Numerical Mathematics*, 114 (2017), 132-153. doi: 10.1016/j.apnum.2016.12.002.
27. De Bonis, M.C., Occorsio, D.: Approximation of Hilbert and Hadamard transforms on  $(0, +\infty)$ . *Applied Numerical Mathematics*, 116 (2017), 184-194. doi: 10.1016/j.apnum.2016.12.001.
28. De Bonis, M.C., Occorsio, D.: Numerical methods for hypersingular integrals on the real line. *Dolomites Research Notes on Approximation*, 10 (2017), 97-117. doi: 10.14658/pupj-drna-2017-Special\_Issue-11.
29. De Bonis, M.C., Occorsio, D.: Numerical computation of hypersingular integrals on the real semiaxis. *Applied Mathematics and Computation*, 313 (2017), 367-383. doi: 10.1016/j.amc.2017.06.009.
30. De Bonis, M.C., Mastroianni, G., Notarangelo, I.: *Elementi di teoria dell'approssimazione polinomiale: appunti dalle lezioni*, Casa Editrice: Aracne, Collana: *Mathematical and Computational Biology and Numerical Analysis*, Vol. 3, Data di pubblicazione: Marzo 2018, ISBN: 978-88-255-1177-2
31. De Bonis, M.C., Laurita, C.: On the stability of a modified Nyström method for Mellin convolution equations in weighted spaces. *Numerical Algorithms*, 15 (2018), no. 2, 611-631. doi: 10.1007/s11075-017-0453-3.
32. De Bonis, M.C., Mastroianni, G.: On the Hermite-Fejer interpolation based at the zeros of generalized Freud polynomials. *Mediterranean Journal of Mathematics*, 15 (1) (2018), art. no. 26. doi:10.1007/s00009-018-1073-4.
33. De Bonis, M.C., Occorsio, D.: A product integration rule for hypersingular integrals in  $(0, +\infty)$ . *Electronic Transactions on Numerical Analysis*, 50 (2018), 129-143. doi:10.1553/etna\_vol50s129
34. De Bonis, M.C., Occorsio, D.: Error bounds for a Gauss-type quadrature rule to evaluate hypersingular integrals. *Filomat*, 32 (2018), no. 7, 2525-2543. doi:10.2298/FIL1807525B
35. De Bonis, M.C., Kubayi, D.: Hermite-Fejer and Grunwald interpolation at generalized Laguerre zeros. *Filomat*, 33 (2019), no. 15. doi:10.2298/FIL1915855D

# Maria Carmela De Bonis

## Curriculum Vitae et Studiorum

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### Education

- February 1, 1995 Degree in Mathematics at the University of Basilicata (110/110).  
*Title of the thesis:* Sul Calcolo Numerico della Trasformata Finita di Hilbert.  
Advisor: Professor Giuseppe Mastroianni.
- March 1, 1995 - February 14, 1996 Scholarship Holder at the Department of Mathematics of the University of Basilicata (grant of the National Research Center (C.N.R.))  
Tutor: Prof. Giuseppe Mastroianni
- March 31, 2004 First Level Degree in Computer Sciences at the University of Basilicata (110/110 cum laude).  
*Title of the thesis:* Un Software per la risoluzione approssimata di Equazioni Integrali di Fredholm.  
Advisor: Professor Giuseppe Mastroianni.
- March 2, 2011 PhD in Mathematics, International Doctoral Seminar "János Bolyai" at the University of Basilicata.  
*Title of the thesis:* Numerical methods for systems of integral equations.  
Advisor: Professor Giuseppe Mastroianni.

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### Professional Experiences

- September 1, 1997 - September 30, 2004 Laboratory Technician at the Department of Mathematics of the University of Basilicata
- October 1, 2004 - June 5, 2012 Assistant Professor in Numerical Analysis at the Faculty of Sciences of the University of Basilicata
- Since June 6, 2012 Assistant Professor in Numerical Analysis at the Department of Mathematics, Computer Science and Economics of the University of Basilicata
- Since November 29, 2013 Member of the Research Board of the University of Basilicata
- November 11, 2011 - March 30, 2015 Member of the Board of the International Doctoral Seminar "Pythagoras of Samos" of University of Basilicata
- July 29, 2013 - May 12, 2017 Member of the Board of the Doctoral Seminar "Mathematics and Computer Science" of University of Basilicata and University of Salento
- Since January 1, 2001 Member of the National Research Group INdAM-GNCS (Gruppo Nazionale per il Calcolo Scientifico dell'Istituto di Alta Matematica)
- Since November 27, 2016 Member of the Italian Net for Approximation RITA (Rete ITALiana di Approssimazione)
- since August 31, 2018 National scientific qualification as Associate Professor

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### Teaching Activity

- 2007-2020 She was responsible of 25 courses in Numerical Analysis on different Courses of Studies (Mathematics, Computer Science, Mechanical Engineering, Chemistry)

2014 She held 15 hours lectures for the Doctoral Seminar “Mathematics and Computer Science” of University of Basilicata and University of Salento, XXIX Cycle

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## Scientific Activity

### Grants

- 1997 Weighted polynomial approximation on infinite and semi-infinite intervals, Bilateral Project Italy-Hungary of the National Research Center (C.N.R.), the S & T cooperation program and the Hungarian National Science Foundation, leaders Professor G. Mastroianni and Professor J. Szabados
- 1999-2000 Trattamento analitico e numerico di equazioni funzionali, Project sponsored by the Italian Ministry of the University and Research, leader Professor G. Mastroianni
- 2002 Trattamento numerico di equazioni integrali e connessi problemi di quadratura ed algebra lineare, Project sponsored by the Italian Ministry of the University and Research (ex 60%), leader Professor G. Mastroianni
- 2002-2003 Approssimazione di Operatori ed Equazioni Integrali, Project sponsored by of the Italian Ministry of the University and Research, leader Professor G. Mastroianni
- 2003 Metodi Numerici per Equazioni Integrali, GNCS (INDAM) Project, leader Professor Giuseppe Mastroianni
- 2004 Trattamento numerico di equazioni integrali e connessi problemi di algebra lineare numerica, Project sponsored by local found (RIL) of the University of Basilicata
- 2004 Trattamento numerico di equazioni integrali singolari e connessi problemi di approssimazione e quadratura, GNCS project, leader Professor G. Mastroianni
- 2005 Proprietà di Mappa di Operatori integrali singolari, Project sponsored by local found (RIL) of the University of Basilicata
- 2005 Trattamento numerico di equazioni integrali singolari e connessi problemi di approssimazione e algebra lineare numerica, GNCS project, leader Professor G. Mastroianni
- 2007-2008 Metodo numerici per il trattamento numerico di equazioni integrali su intervalli limitati, Project sponsored by local found (RIL) of the University of Basilicata
- 2007-2008 Equazioni integrali con nucleo strutturato e applicazioni, PRIN project 2006, leader Professor D. Bini
- 2009-2010 Trattamento numerico di sistemi di equazioni integrali, Project sponsored by local found (RIL) of the University of Basilicata
- 2010-2012 Equazioni integrali con struttura e sistemi lineari, PRIN project 2008, leader Professor D. Bini
- 2011 Tecniche numeriche per problemi di propagazione di onde elastiche in multidomini, GNCS project, leader Professor A. Aimi
- 2013-2018 Equazioni integrali e approssimazione polinomiale pesata in domini di  $R^2$ , Project sponsored by local found (RIL) of the University of Basilicata
- 2013 Metodi fast per la risoluzione numerica di sistemi di equazioni integro-differenziali, GNCS project, leader Professor A. Aimi

- 2016 Integrazione numerica di problemi singolari e di evoluzione con basi non standard, GNCS project, leader Professor D. Conte
- 2017 Fondo di Finanziamento per le Attività Base di Ricerca (FFABR) (art. 1, commi 295 e seguenti, della Legge 11 dicembre 2016)
- 2018 Metodi, algoritmi e applicazioni dell'approssimazione multivariata, GNCS project, leader Professor A. De Rossi
- 2019 Discretizzazione di misure, approssimazione di operatori integrali ed applicazioni, GNCS project, leader Professor D. Occorsio
- 2020-2021 Approssimazione multivariata ed equazioni funzionali per la modellistica numerica, GNCS project, leader Professor E. Francomano

### Organizing Activity

- September 24-30, 2009 Member of the Organizing Committee of the "6-th Conference in Functional Analysis and Approximation Theory", Acquafredda di Maratea (Potenza, Italy)
- September 12-13, 2013 Member of the Organizing Committee of the "International Workshop on Approximation Theory and Applications" dedicated to Giuseppe Mastroianni on the occasion of his retirement, Rifreddo (Potenza, Italy)

### Referring Activity

Applied Mathematics and Computations  
 Journal of Computation and Applied Mathematics  
 Mathematical and Computer Modelling  
 Computers & Mathematics with Applications  
 Journal of Integral Equations & Applications  
 Applied Numerical Mathematics  
 Acta Applicandae Mathematicae  
 Alexandria Engineering Journal  
 Applied Mathematical Modelling  
 Communications in Nonlinear Science and Numerical Simulations  
 Indian Journal of Pure and Applied Mathematics  
 International Journal of Computer Mathematics  
 Linear and Multilinear Algebra

### Reviewing Activity

Mathematical Reviews (MATHSCINET) of American Mathematical Society (AMS)

### Visiting Researcher

- October 8-18, 2003 Faculty of Electronic Engineering of the University of Nis, Serbia. She worked with the research group of Professor G. Milovanovic on the topic "Numerical Methods for Fredholm Integral Equations of the First Kind"

- November 26, 2004–December 3, 2004 Faculty of Electronic Engineering of the University of Nis, Serbia. She worked with the research group of Professor G. Milovanovic on the topic “Numerical Methods for Fredholm Integral Equations of the First Kind”
- July 4, 2008–September 14, 2008 Mathematical Institute of Serbian Academy of Sciences and Arts (SASA) of Belgrade, Serbia. She worked on the Research Project “Interpolation and Quadrature Processes Based on the Theory of Orthogonality”, especially on the topic “Orthogonal Polynomials and Quadrature Rules”, Leader: Professor G. Milovanovic
- July 15, 2009–September 20, 2009 Mathematical Institute of Serbian Academy of Sciences and Arts (SASA) of Belgrade, Serbia. She worked on the Research Project “Interpolation and Quadrature Processes Based on the Theory of Orthogonality”, especially on the topic “Orthogonal Polynomials and Quadrature Rules”, Leader: Professor G. Milovanovic
- August 1, 2010– September 30, 2010 Mathematical Institute of Serbian Academy of Sciences and Arts (SASA) of Belgrade, Serbia. She worked on the Research Project “Interpolation and Quadrature Processes Based on the Theory of Orthogonality”, especially on the topic “Quadrature Rules and Integral Equations”, Leader: Professor G. Milovanovic
- September 22–27, 2015 Department of Mathematics of the North-West University, Potchefstroom, South Africa. She worked with Professor David Kubayi
- 04/03/2018–10/03/2018 Faculty of Science of the University of Kragujevac. She held 3 academic lectures of the Master’s degree course “Numerical analysis 2” at the Department of Mathematics and Informatics and she worked with Professor Marija Stanic

## Talks at National and International Conferences

### Plenary Talk:

- 23/09/2015–26/09/2015 M.C. De Bonis: Weighted polynomial approximation and mapping properties of singular integral operators, NWU-PUK Mathematics Workshop on Functional Analysis and its Applications, North-West University, Potchefstroom, South Africa

### Invited Talks:

- November 18–24, 2001. M.C. De Bonis, G. Mastroianni: Some simple Quadrature Rules to evaluate the Hilbert Transform on the Real Line, Meeting on Numerical Integration and its Complexity, Oberwolfack, Germany
- October 10, 2003 M.C. De Bonis, G. Mastroianni: Projection methods for CSIE on finite interval, Workshop on Applied Orthogonal Systems, Constructive Approximation and Numerical Methods, Kragujevac, Serbia
- September 23–26, 2010 M.C. De Bonis, G. Mastroianni: A numerical method for systems of Fredholm integral equations on the real line, Second International Conference on Numerical Analysis and Approximation Theory, Cluj-Napoca, Romany
- June 25–28, 2012 M.C. De Bonis, G. Mastroianni: Direct methods for CSIE in weighted Zygmund spaces with uniform norm, Congresso SIMAI, Torino, Italy
- September 8–13, 2016 M.C. De Bonis, D. Occorsio: Approximation of hypersingular integral transforms on the real axis, 4-th Dolomites Workshop on Constructive Approximation and Applications (DWCAA16), Alba di Canazei, Italy
- July 2–6, 2018 M.C. De Bonis, D. Occorsio: A product quadrature rule for Hadamard finite-part integrals on the finite semiaxis, XIV Biennial Conference of the Italian Society of Applied and Industrial Mathematics (SIMAI), Rome, Italy

- July 8-13, 2018 M.C. De Bonis, C. Laurita: On the numerical solution of integral equations with fixed singularities of Mellin type in weighted uniform spaces, IX Jaen Conference on Approximation Theory, Ubeda, Jaen, Spain
- May 27-29, 2019 M.C. De Bonis, C. Laurita: A Quadrature method for Cauchy singular integral equations with additional fixed singularities of Mellin type, Recent Advances in Scientific Computation (ETNA25), Santa Margherita di Pula, Italy
- September 4-6, 2019 M.C. De Bonis, D. Occorsio: Weighted polynomial approximation in the numerical resolution of integro-differential equations of Prandtl's type, XXI Congresso dell'Unione Matematica Italiana - Sezione S11: Teoria dell'approssimazione ed applicazioni, Pavia

#### Contributed Talks:

- September 9-12, 1997 M.C. De Bonis, B. Della Vecchia, G. Mastroianni: Approximation of the Weighted Hilbert Transform on the real line, International Workshop on Approximation Theory and Numerical Analysis, Vico Equense (Naples), Italy
- July 27-August 1, 1998 M.C. De Bonis, B. Della Vecchia, G. Mastroianni: Approximation of the Hilbert Transform on the real axes using Hermite zeros, International Congress on Computational and Applied Mathematics, Leuven, Belgium
- May 9-12, 1999 M.C. De Bonis, M.G. Russo: Approximation of the Weighted Hilbert Transform, Workshop on Advanced Special Functions and Applications, Melfi (Potenza), Italy
- August 9-14, 1999 M.C. De Bonis, G. Mastroianni, M. Viggiano: Best Approximation and Moduli of Smoothness on the semiaxis, Functions, Series, Operators. Alexits Memorial Conference, Budapest, Hungary
- August 31-September 1, 1999 M.C. De Bonis, B. Della Vecchia, G. Mastroianni: Best Approximation on the semiaxis and some applications, Meeting on Approximation Theory and Numerical Analysis, Vico Equense (Naples), Italy
- June 18-23, 2000 M.C. De Bonis, B. Della Vecchia, G. Mastroianni: Some Integration Rules on the real semiaxis, 2nd Workshop on Advanced Special Functions and Integration Methods, Melfi (Potenza), Italy
- July 17-21, 2000 M.C. De Bonis, B. Della Vecchia, G. Mastroianni: Approximation of the Hilbert Transform on the Real Semiaxis using Laguerre zeros, Ninth International Congress on Computational and Applied Mathematics, Leuven, Belgium
- September 16-20, 2000 M.C. De Bonis, G. Mastroianni: Numerical Problems in the Evaluation of the Hilbert Transform, Workshop on Quadrature and Numerical Methods for integral equations, Rifreddo (Potenza), Italy
- June 18-22, 2001 M.C. De Bonis, G. Mastroianni: Numerical Evaluation of the Hilbert Transform on the real axes, Sixth International Symposium on Orthogonal Polynomials, Special Functions and Applications, Lido di Ostia (Rome), Italy
- July 22-26, 2002 M.C. De Bonis, C. Frammartino, G. Mastroianni: Numerical methods for some special Fredholm integral equations on the Real line, Tenth International Congress on Computational and Applied Mathematics, Leuven, Belgium
- June 13-16, 2003 M.C. De Bonis, M.C. Russo: Interpolation of functions having inner singularity in  $[-1,1]$ , IV Encuentro Internacional de Aproximacion de la Universidad de Jaen, Ubeda, Spain
- June 24-27, 2003 M.C. De Bonis, G. Mastroianni: Nyström and projection methods for CSIE on finite interval, IWOTA 2003, Cagliari, Italy

- June 9-14, 2004 M.C. De Bonis, G. Mastroianni: Polynomial approximation of the solutions of Cauchy Singular Integral Equations, V Encuentro Internacional de Aproximacion de la Universidad de Jaen, Ubeda, Spain
- June 16-23, 2004 M.C. De Bonis, G. Mastroianni: Numerical Methods for CSIE in  $[-1,1]$ , 5th International Conference on Functional Analysis and Approximation Theory, Acquafredda di Maratea (Potenza), Italy
- September 27-28, 2007 M.C. De Bonis, G. Mastroianni: Un Metodo di Nyström per sistemi di equazioni di Fredholm sulla semiretta reale, Equazioni integrali: recenti sviluppi numerici e nuove applicazioni, Parma, Italy
- August 25-29, 2008 M.C. De Bonis, G. Mastroianni: Nyström Method for systems of Fredholm integral equations on the real semiaxis, Approximation & Computation, Conference dedicated to Prof. Gradimir V. Milovanovic on the occasion of his 60-th anniversary, Nis, Serbia
- May 24-28, 2009 M.C. De Bonis, C. Laurita, G. Mastroianni: Nyström Method for Fredholm integral equations on bounded intervals via orthogonal polynomials, 4-th Workshop Advanced Special Functions and solution of PDEs, Sabaudia, Italy
- September 24-30, 2009 M.C. De Bonis: Quadrature Rules for high-oscillatory and periodic functions, 6-th International Conference on Functional Analysis and Approximation Theory, Acquafredda di Maratea, Italy
- October 5-9, 2009 M.C. De Bonis, G. Mastroianni: Nyström Method for systems of Fredholm integral equations on the real axis, Workshop on Advances and Trends in Integral Equations. Dedicated to the memory of Siegfried Prössdorf, Chemnitz, Germany
- October 29-30, 2009 M.C. De Bonis, G. Mastroianni: Numerical treatment of systems of Fredholm integral equations on the real axis, Workshop on Integral Equations: recent numerical developments and new applications, Parma, Italy
- March 29-April 1, 2011 M.C. De Bonis, C. Laurita: Numerical treatment of systems of Cauchy singular integral equations, Workshop on Functional Analysis and Operator Theory, Dedicated to Bernd Silbermann on his 70th birthday, Altenberg, Germany
- July 9-13, 2012 M.C. De Bonis, G. Mastroianni: Numerical treatment of systems of Fredholm integral equations on unbounded intervals, International Congress on Computational and Applied Mathematics (ICCAM), Gent, Belgium
- June 25-28, 2013 M.C. De Bonis: Remarks on two integral operators and numerical methods for Cauchy singular integral equations, 25th Biennial Conference on Numerical Analysis, Glasgow, UK
- September 2-5, 2014 M.C. De Bonis, D. Occorsio: Numerical evaluation of hypersingular integrals on the semiaxis, 6th International Conference on Numerical Analysis, Chania, Crete, Greece
- October 22-24, 2015 M.C. De Bonis, C. Laurita: A Nyström method for integral equations with fixed singularities of Mellin type in weighted  $L^p$  spaces, The Fifth International Workshop on Analysis and Numerical Approximation of Singular Problems (IWANASP 2015), Lagos, Portugal
- November 30-December 2, 2017 M.C. De Bonis, D. Occorsio: On a quadrature method for Prandtl's integro-differential equations in weighted Zygmund spaces with uniform norm, Acta 2017: Approximation and Computation - Theory and Applications, Belgrade, Serbia
- May 16-19, 2018 M.C. De Bonis, M.P. Stanic, T.V. Tomovic: A Nyström method for approximating the solutions of an integral equation arising from a problem in mathematical biology, SMAK 2018: 14th Serbian Mathematical Congress, Kragujevac



September 3-7, 2018 M.C. De Bonis, D. Occorsio: A quadrature method for a singular integro-differential equation in weighted Zygmund spaces with uniform norm, IWANASP18: International Workshop on Analysis and Numerical Approximation of Singular Problems, Cagliari, Italy

January 16-18, 2020 M.C. De Bonis, C. Laurita: Numerical solution of Cauchy singular integral equations with additional fixed singularities of Mellin convolution type, MATA 2020, Perugia, Italy

#### Posters:

September 8-13, 2014 M.C. De Bonis, C. Laurita: A Nyström method for integral equations with Mellin type kernels, Dolomites Research Week on Approximation, Alba di Canazei, Trento

June 18-21, 2015 M.C. De Bonis, D. Occorsio: A method to approximate Hadamard Finite part transforms on the positive semiaxis, New Trends in Numerical Analysis: Theory, Methods, Algorithms and Applications, Falerna, Catanzaro

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## List of Publications

1. De Bonis, M.C.: An algorithm for the evaluation of two-dimensional Hilbert transform. *Journal of Electrotechnics and Mathematics (Pristina)*, 4 (1999), 1-34.
2. De Bonis, M.C.: An algorithm for the evaluation of two-dimensional Hilbert transform with non-standard weight functions. *Facta Universitatis (Nis), Ser. Math. Inform.* 14 (1999), no. 14, 109-134.
3. De Bonis, M.C., Russo, M.G.: Computation of the Cauchy principal value integrals on the real line. *Proceedings of the "Workshop on Advanced Special Functions and Applications"*, Melfi (PZ), Italy, 9-12 May 1999, eds. D. Cocolicchio, G. Dattoli and H.M. Srivastava (ARACNE, Rome) 2000, 197-210.
4. De Bonis, M.C., Della Vecchia, B., Mastroianni, G.: Approximation of the Hilbert transform on the real line using Hermite zeros. *Mathematics of Computation*, 71 (2002), no. 239, 1169-1188. doi:10.1090/S0025-5718-01-01338-2
5. De Bonis, M.C., Della Vecchia, B., Mastroianni, G.: Approximation of the Hilbert transform on the real semiaxis using Laguerre zeros. *Proceedings of the 9th International Congress on Computational and Applied Mathematics (Leuven, 2000)*, *Journal of Computation and Applied Mathematics*, 140 (2002), no. 1-2, 209-229. doi: 10.1016/S0377-0427(01)00529-5.
6. De Bonis, M.C., Mastroianni, G., Viggiano, M.: K-functionals, Moduli of Smoothness and Weighted Best Approximation on the semiaxis. *Functions, Series, Operators (L. Leindler, F. Schipp, J. Szabados, eds.) Janos Bolyai Mathematical Society, Budapest, Hungary, Alexits Memorial Conference (2002)*, 181-211.
7. De Bonis M.C., Mastroianni G., Russo M.G.: Polynomial approximation with special doubling weights. *Acta Scientiarum Mathematicarum (Szeged)*, 69 (2003), no. 1-2, 159-184.
8. De Bonis, M.C., Mastroianni, G.: Some simple quadrature rules for evaluating the Hilbert transform on the real line. *Archives of Inequalities and Applications*, 1 (2003), no. 3-4, 475-494.
9. De Bonis, M.C., Frammartino, C., Mastroianni, G.: Numerical methods for some special Fredholm integral equations on the real line. *Proceedings of the 10th International Congress on Computational and Applied Mathematics (ICCAM-2002)*, *Journal of Computation and Applied Mathematics*, 164/165, (2004), 225-243. doi: 10.1016/S0377-0427(03)00652-6.
10. Cvetkovic, A., De Bonis, M.C.: Projection methods for Cauchy singular integral equations on the bounded intervals. *Facta Universitatis (Nis), Ser. Math. Inform.*, Special Issue dedicated to Prof. Giuseppe Mastroianni for his 65th birthday, 19 (2004), 123-144.
11. De Bonis, M.C., Mastroianni, G.: Mapping properties of some singular operators in Besov type subspaces of  $C(-1, 1)$ . *Integral Equations Operator Theory*, 55 (2006), no. 3, 387-413. doi: 10.1007/s00020-005-1396-y.
12. De Bonis, M.C., Mastroianni, G.: Projection methods and condition numbers in uniform norm for Fredholm and Cauchy singular integral equations. *SIAM Journal on Numerical Analysis*, 44 (2006), no. 4, 1351-1374.

doi: 10.1137/050626934.

13. De Bonis, M.C., Laurita, C.: Numerical treatment of second kind Fredholm integral equations systems on bounded intervals. *Journal of Computational and Applied Mathematics*, 217 (2008), no. 1, 64-87. doi: 10.1016/j.cam.2007.06.014.
14. De Bonis, M.C., Laurita, C.: Nyström methods for Cauchy singular integral equations. A survey, *Rivista di Matematica dell'Università di Parma* (7), 8 (2008), 139-169.
15. De Bonis, M.C., Mastroianni, G.: Nyström method for systems of integral equations on the real semiaxis. *IMA Journal of Numerical Analysis*, 29 (2009), no. 3, 632-650. doi: 10.1093/imanum/drn035.
16. De Bonis, M.C., Laurita, C.: Nyström method for Cauchy Singular Integral Equations with negative index. *Journal of Computational and Applied Mathematics*, 232 (2009), no. 2, 523-538. doi: 10.1016/j.cam.2009.06.028.
17. De Bonis, M.C., Pastore, P.: A quadrature formula for integrals of highly oscillatory functions. *Rendiconti del Circolo di Matematico di Palermo Serie II, Suppl.* 82 (2010), 279-303
18. De Bonis, M.C., Mastroianni, G.: Direct methods for CSIE in weighted Zygmund spaces with uniform norm. *Rivista di Matematica dell'Università di Parma*, Vol. 2 (2011), 29-55
19. De Bonis, M.C., Mastroianni, G., Notarangelo, I.: Gaussian quadrature rules with exponential weights on  $(-1,1)$ . *Numerische Mathematik*, 120 (2012), no.3, 433-464. doi: 10.1007/s00211-011-0417-9.
20. De Bonis, M.C., Laurita, C.: A quadrature method for systems of Cauchy Singular Integral Equations. *Journal of Integral Equations and Applications*, 24 (2012), no.2, 241-271. doi:10.1216/JIE-2012-24-2-241.
21. De Bonis, M.C., Laurita, C.: Numerical solution of systems of Cauchy singular integral equations with constant coefficients. *Applied Mathematics and Computation*, 219 (2012), no. 4, 1391-1410. doi: 10.1016/j.amc.2012.08.022.
22. De Bonis, M.C.: Remarks on two integral operators and numerical methods for CSIE. *Journal of Computational and Applied Mathematics*, 260 (2014), 117-134. doi: 10.1016/j.cam.2013.09.063.
23. De Bonis, M.C., Mastroianni, G.: Numerical Treatment of a class of systems of Fredholm integral equations on the real line. *Mathematics of Computation*, 83 (2014), no. 286, 771-788. doi: 10.1090/S0025-5718-2013-02727-5.
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