

**Simona Sanfelici**

## Address

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## Education

- Degree in Mathematics, University of Parma (April 1994).
- PhD in Computational Mathematics and Operational Research, University of Milan (July 1998).

## Current position

- Full Professor of Mathematical Methods for Economics, Actuarial Sciences and Finance, Department of Economics, University of Parma (since January 2020).
- National Scientific Qualification (ASN) as Full Professor, Area 13/D4 - METODI MATEMATICI DELL'ECONOMIA E DELLE SCIENZE ATTUARIALI E FINANZIARIE, achieved on April 5, 2017.

## Past academic positions

- Permanent Research Associate of Mathematical Methods for Economics, Actuarial Sciences and Finance, Faculty of Economics, University of Parma (from February 2000 to December 2005).
- Associate Professor of Mathematical Methods for Economics, Actuarial Sciences and Finance, Faculty of Economics, University of Parma (from December 2005 to January 2020).

## Distinctions

- Best thesis award to graduates in 1994, assigned by Banca Agricola Mantovana.
- Second prize of the Young Investigator's Award at the “XXV International Congress on Electrocardiology”, Budapest, June 1998.

## Fellowships

- C.N.R. scholarship in Mathematical Sciences (1993).
- CINECA fellowship, at the E.N.E.A. of Bologna (1998).
- C.N.R. fellowship, at the C.N.R. Institute of Numerical Analysis of Pavia (1998).
- Post-Doc fellowship in Mathematical Sciences, University of Parma (1998).
- EU Post-Doc fellowship, Joint Research Centre of the European Commission, Ispra (VA) (1999).

## Teaching

- **University of Parma - Faculty of Economics**
  - Game Theory, 2nd level degree in Business Economics.
  - Basic Calculus, 1st level degree in Business Economics.

- Mathematical Methods for Economics, 2nd level degree in Business Economics.
  - Mathematical Methods for Finance, 2nd level degree in Finance and Risk Management.
  - Risk Management, 2nd level degree in Finance and Risk Management.
  - Quantitative Finance, 2nd level degree in Finance and Risk Management.
  - Mathematical Finance, 2nd level degree in Finance and Risk Management.
- **University of Parma - Other Faculties**
- Faculty of Sciences: Mathematical Analysis, 1st level degree.
  - Faculty of Engineering: Mathematical Analysis, 1st level degree.
  - Faculty of Sciences: Computational Mathematics, 1st level degree.
  - Faculty of Engineering: Numerical Analysis, 1st level degree.
  - Faculty of Medicine: Basic Calculus, 1st level degree.

### Short courses

- Stochastic Differential Equations for Finance, 2nd level degree in Business Economics, University of Parma (2002, 2003).
- Finite Element Method, Master in Mathematical Finance, Ritsumeikan University, Japan (2004).
- An introduction to numerical methods for ODE's, Master in Mathematical Finance, Ritsumeikan University, Japan (2010).
- Fast numerical pricing of barrier options via Boundary Element Methods, Master in Mathematical Finance, Ritsumeikan University, Japan (2016).

### Visiting periods

- Department of Mathematical Sciences, Ritsumeikan University di Kusatsu, Japan (2004, 2008, 2010).
- School of Mathematics and Applied Statistics, University of Wollongong, Australia (2006).
- Laboratoire de Probabilités et Modèles Aléatoires - Universités Pierre et Marie Curie (Paris VI) (2007, 2008, 2009).
- Institute of Mathematics, Universität Erlangen-Nürnberg (2007).
- DG Economic and Financial Affairs, European Commission, Bruxelles (2011).
- Stefan cel Mare University of Suceava, Romania (2013).
- Lingnan (University) College, Sun Yat-Sen University, Guangzhou, China (2014).
- Department of Mathematical Sciences, Ritsumeikan University, Kusatsu, Japan (2016).
- School of Business and Economics - Department of Finance, Vrije Universiteit, Amsterdam, The Netherlands (2017).
- Institute of Mathematical Finance, Ulm University, Ulm, Germany (2018).

### Main research areas

- Option pricing. Asset allocation. Stochastic optimal impulse control. Cash management.
- Volatility estimation for high frequency financial data; market microstructure effects.
- Stochastic processes and stochastic differential equations. Kolmogorov equation. Variational methods. Semigroup theory. Upper and lower solutions to parabolic systems of PDE's.
- Numerical Analysis: approximation to PDE's; solution to degenerate, nonlinear PDE's and to problems in unbounded domains; Galerkin Finite Element method; Finite Difference method; Montecarlo method.
- Computational Electrophysiology.

### Seminars

- “Simulazione Numerica del Processo di Attivazione nel Miocardio Anisotropo”, Dipartimento di Matematica, Università di Parma, June 1995.

- “Un metodo probabilistico per risolvere equazioni di reazione-diffusione”, Dipartimento di Matematica, Università di Milano, December 1995.
- “Alcuni metodi numerici per la soluzione di problemi di reazione-diffusione in elettrocardiologia”, Dipartimento di Matematica, Università di Parma, May 1996.
- “Modelli matematici del comportamento elettrico del tessuto cardiaco: metodi numerici ed applicazioni”, CRS4 di Cagliari, February 1998.
- “Comparison of Numerical Methods for the Approximation of Option Price”, Facoltà di Economia, Università di Parma, March 2001.
- “Galerkin Finite Element Approximation for Pricing Barrier Options”, Dipartimento di Matematica, Università di Bologna, October 2001.
- “Infinite Elements in Finanza”, Dipartimento di Matematica, Università di Parma, July 2003.
- “The Infinite Element Method for solving problems on unbounded domain arising in Finance”, Department of Mathematical Sciences, Ritsumeikan University, Kyoto, Japan, May 2004.
- “The Infinite Element Method for solving a nonlinear feedback option pricing model”, Nihon University, Tokyo, Japan, May 2004.
- “Finite sample properties of the Fourier integrated variance estimator under microstructure noise”, Laboratoire de Probabilités et Modèles Aléatoires - Paris VI, April 2007.
- “The Fourier integrated variance estimator under microstructure noise”, Swiss Finance Institute, University of Lugano, May 2007.
- “Variance/covariance estimation for high frequency data”, Department of Economics, University of Parma, December 2008.
- “Covariance estimation via Fourier method in the presence of asynchronous trading and microstructure noise”, DIMAD, Università di Firenze, January 2009.
- “Covariance estimation in the presence of asynchronous trading and microstructure noise”, University of Parma, February 2010.
- “Estimation of Quarticity with high frequency data”, Department of Economics, University of Parma, March 2011.
- “Which is the correct measure of volatility? Risk-neutral vs historical probability”, DG Economic and Financial Affairs, European Commission, June 2011.
- “Multivariate volatility estimation with high frequency data: Theory and Applications”, Department of Mathematics, University of Parma, January 2012.
- “Multivariate volatility estimation with high frequency data using Fourier method”, Department of Quantitative Methods, University of Milano Bicocca, January 2012.
- “Volatility estimation with high frequency data”, Lingnan (University) College, Sun Yat-Sen University, Guangzhou, China, July 2014.
- “Volatility estimation via Fourier method from high-frequency data”, Department of Mathematical Sciences, Ritsumeikan University, Kusatsu, Japan, September 2016.
- “Factors identification of stochastic volatility models in a high-frequency framework”, Tinbergen Institute, Amsterdam, The Netherlands, September 2017.
- “Factors identification of stochastic volatility models from high-frequency data” Institute of Mathematical Finance, Ulm University, Ulm, Germany, April 2018.

## Invited talks

- Workshop “La Matematica nei Problemi dell’Ambiente, della Biologia e della Medicina”, Urbino, 1996.
- Workshop “Giornate di biomatematica”, ENEA Centro Ricerche Ambiente Marino, Lerici (SP), 1998.
- Giornata di studio sul tema “Metodi Numerici per la Finanza”, Venezia, 2003.
- “Computational Management Science” Conference e Workshop on “Computational Econometrics and Statistics”, Neuchâtel, Svizzera, 2004.
- “VII Congresso Nazionale della SIMAI”, Venezia, 2004.
- Workshop “Equazioni di Kolmogorov”, Parma, 2004.

- "VIII Congresso Nazionale della SIMAI", Baia Samuele (Ragusa), 2006.
- "8th Ritsumeikan International Symposium on Stochastic Processes and Application to Mathematical Finance", Kyoto, Japan, 2008.
- "Credit Risk Workshop", Torino, 2008.
- "Second Florence-Ritsumeikan Workshop on Finance and Risk theory", Kusatsu, Japan, 2010.
- "XV Convegno Nazionale di Fisica Statistica e dei Sistemi Complessi", Parma, 2010.
- "Conference on Modeling High Frequency Data in Finance II", Stevens Institute of Technology, New Jersey, USA, 2010.
- "Statistical inference and numerical analysis for stochastic processes and financial econometrics", Firenze, 2011.
- "8th International Conference on Computational Management Science (CMS2011)", Neuchâtel, 2011.
- "Multivariate volatility estimation with high frequency data using Fourier method: Theory and Applications", Colloquium on Computational Economics and Finance, University of Cyprus, Lemesos, Cyprus, 2011.
- "20th International Conference on COMPUTATIONAL STATISTICS (COMPSTAT 2012)", Lemesos, Cyprus, 2012.
- "Fifth Florence-Ritsumeikan Workshop on Stochastic Processes and Applications", Firenze, 2013.
- "Fifth Annual Modeling High Frequency Data in Finance Conference", Stevens Institute of Technology, New Jersey, USA, 2013.
- Workshop "Portfolio managing, stochastic processes and financial econometrics", Firenze, 2018.
- "UMI-SIMAI-PTM JOINT MEETING", Wroclaw, Poland, September 17-20, 2018.

## Other Conferences

- "III Congresso Nazionale della SIMAI", Salice Terme (PV), 1996.
- "1st International Conference on Bioelectromagnetism", Tampere - Finland, 1996.
- "Convegno Nazionale di Analisi Numerica", Montecatini Terme, 1998.
- "IV Congresso Nazionale della SIMAI", Giardini Naxos (ME), 1998.
- "XXV International Congress on Electrocardiology", Budapest, 1998.
- Euroconference "Front Propagation: Theory and Applications", Anogia, Crete, 1998.
- "PDE Prague98", Praga, 1998.
- "XXIV Convegno A.M.A.S.E.S.", Padenghe sul Garda, 2000.
- "II Workshop di Finanza Quantitativa", Pisa, 2001.
- "MENC2001: Metodi Numerici e Computazionali per la Finanza", Venezia, 2001.
- "ENUMATH 2001: European Conference on Numerical Mathematics and Advanced Applications", Ischia (NA) 2001.
- "XXV Convegno A.M.A.S.E.S.", Firenze, 2001.
- "III Workshop di Finanza Quantitativa", Verona, 2002.
- "Computational Methods and Applications in Finance", The Fields Institute for Mathematical Sciences, Toronto, 2002.
- Workshop "Mercati Finanziari: Progettazione di Modelli e Analisi dei Dati", Dipartimento di Matematica per le Decisioni Economiche, Finanziarie, Attuariali e Sociali, Firenze, 2002.
- "VI Congresso Nazionale della SIMAI", Località Chia, Domus de Maria, (CA), 2002.
- "CEF2002: VIII International Conference of the Society for Computational Economics", Aix en Provence, 2002.
- "XXVII Convegno A.M.A.S.E.S.", Cagliari, 2003.
- "V Workshop di Finanza Quantitativa", Siena, 2004.
- "Bachelier Finance Society III World Congress", Chicago, 2004.
- "XXVIII Convegno A.M.A.S.E.S.", Modena, 2004.
- "XXIX Convegno A.M.A.S.E.S.", Palermo, 2005.
- Workshop "New mathematical methods in Risk Theory", Firenze, 2005.

- "Quantitative methods in Finance 2005", Sydney, 2005.
- "Numerical Methods for Finance", Dublin, 2006.
- "XXX Convegno A.M.A.S.E.S.", Trieste, 2006.
- "Quantitative methods in Finance 2006", Sydney, 2006.
- "22nd Annual Congress of the European Economic Association" and "62nd European meeting of the Econometric Society", Budapest 27-31 2007.
- "IX Workshop on Quantitative Finance", Roma, 2008.
- "Second international Workshop on Computational and Financial Econometrics (CFE'08)", Neuchâtel, Svizzera, 2008.
- "Bachelier Finance Society V World Congress", London, 2008.
- "23rd Annual Congress of the European Economic Association" and "63rd European meeting of the Econometric Society", Milano 2008.
- "X Workshop on Quantitative Finance", Milano, 2009.
- "First Florence-Ritsumeikan Workshop on Finance and Risk theory", Firenze, 2009.
- "XXXIII Convegno A.M.A.S.E.S.", Parma, 2009.
- "Third international Workshop on Computational and Financial Econometrics (CFE'09)", Limassol, Cyprus, 2009.
- "XI Workshop on Quantitative Finance", Palermo, 2010.
- "Fourth international Workshop on Computational and Financial Econometrics (CFE'10)", London, 2010.
- "XII Workshop on Quantitative Finance", Padova, 2011.
- "High Frequency Research Training Workshop", Berlin, 2011.
- "Fifth international Workshop on Computational and Financial Econometrics (CFE'11)", London, 2011.
- "Fifth International Conference on Mathematical and Statistical Methods for Actuarial Sciences and Finance (MAF 2012)", Venezia, 2012.
- "Sixth CSDA International Conference on Computational and Financial Econometrics (CFE'12)", Oviedo, 2012.
- "European Research Development in Horizont 2020 (ERDH-2020)", Suceava, Romania, 2013.
- "Seventh CSDA International Conference on Computational and Financial Econometrics (CFE'13)", London, 2013.
- "XV Workshop on Quantitative Finance", Firenze, 2014.
- "International Symposium on Differential Equations and Stochastic Analysis in Mathematical Finance (ISDESAMF)", Sanya, China, 2014.
- "Eighth CSDA International Conference on Computational and Financial Econometrics (CFE'14)", Pisa, 2014.
- "XVI Workshop on Quantitative Finance", Parma, 2015.
- "Econophysics Colloquium 2015", Prague, 2015.
- "XVII Workshop on Quantitative Finance", Pisa, 2016.
- "At the Frontiers of Quantitative Finance", Edinburgh, 2016.
- "IX World Congress of the Bachelier Finance Society", New York, 2016.
- "Congresso Nazionale della SIMAI", Milano, 2016.
- "Tenth International Conference on Computational and Financial Econometrics (CFE'16)", Seville, 2016.
- "XVIII Workshop on Quantitative Finance", Milano, 2017.
- "XLI Convegno A.M.A.S.E.S.", Cagliari, 2017.
- "XIX Workshop on Quantitative Finance", Rome, 2018.
- "42nd Annual Meeting of the AMASES", Napoli, 2018.
- "XX Workshop on Quantitative Finance", ETH Zurich, 2019.
- "II International Symposium on Partial Differential Equations and Stochastic Analysis in Mathematical Finance (ISDESAMF)", Sanya, China, 2020.
- "XXI Workshop on Quantitative Finance", Napoli, 2020.

## **Refereeing activity**

Decision in Economics and Finance, Quantitative Finance, European Journal of Operational Research, Applied Numerical Mathematics, Asian Pacific Management Review, Computers and Mathematics with Applications, Communications in Nonlinear Science and Numerical Simulation, Computational Statistics & Data analysis, Mathematical and Computer Modelling, Applied Mathematics and Computation, Applied Mathematics Letters, J. of Applied Analysis and Computation, Applied Mathematics E-Notes, Asian Social Sciences, J. Financial Econometrics, Research Proposals of the Research Grants Council (RGC) of Hong Kong, IMA J. of Management Mathematics, Stochastic Processes and their Applications, Int. J. of financial Engineering and risk Management, The Journal of Econometrics, J. of Business & Economic Statistics, Research Proposals of the Netherlands Organisation for Scientific Research, North American Journal of Economics and Finance, Journal of Financial Engineering.

## **International Editorial Boards**

European Journal of Accounting, Finance & Business (ISSN: 2344 - 102X, ISSN-L: 2344 - 102X).

## **Scientific Committees**

- Scientific Committee of the “Ritsumeikan-Columbia-Jafee International Symposium on Stochastic Processes and Application to Mathematical Finance”, Kyoto, March 19-22, 2008.
- Scientific Committee of the “2nd Ritsumeikan-Florence joint workshop on Finance and Risk Theory”, Ritsumeikan University, Shiga, Japan, March 10-11, 2010.
- Scientific Program Committee of the International Conference of the European Research Consortium for Informatics and Mathematics (ERCIM) Working Group on Computing & Statistics (ERCIM 2011).
- Scientific Program Committee of the “CSDA International Conference on Computational and Financial Econometrics” (CFE 2011, CFE 2012 and CFE 2013).
- President of the Scientific Program Committee of the “XVI Workshop on Quantitative Finance”, Parma 2015.

(last update: January 2, 2021)

## Selected references

### Pubblicazioni – Publications

- I. Curato, S. Sanfelici, "Stochastic leverage effect in high-frequency data: a Fourier based analysis", Submitted, 2020.
- M.E. Mancino, S. Sanfelici "Nonparametric Malliavin-Monte Carlo Computation of Hedging Greeks", *Risks*, 8(4) 2020, 120, 1–17. ([website](#))
- E. Alòs, M.E. Mancino, R. Merino and S. Sanfelici "A fractional model for the COVID-19 pandemic: Application to Italian data", *STOCHASTIC ANALYSIS AND APPLICATIONS*, Accepted (2020). ([website](#))
- E. Allodi, C. Cacciamani, M. Calio, P.P. De Santis, F. Della Marra, S. Sanfelici, "Real Estate Asset Management Companies Economies of Scale: is it dream or reality? The Italian case", *Complexity*, 2020, 8752865, 1–9. ([website](#))
- S. Sanfelici and M.E. Mancino "Identifying financial instability conditions using high frequency data", *J. Economic Interaction and Coordination*, 15(1) 2020, 221–242. ([website](#))
- C. Guardasoni, M.R. Rodrigo, S. Sanfelici, "A Mellin transform approach to barrier option pricing", *IMA Journal of Management Mathematics*, 31(1) 2020, 49–67. ([website](#))
- C. Guardasoni, S. Sanfelici, "Fast numerical pricing of barriers options under stochastic volatility and jumps", *SIAM J. Appl. Math.*, 76(1) 2016, 27–57. ([website](#))
- C. Guardasoni, S. Sanfelici, "A Boundary Element approach to barrier option pricing in Black-Scholes framework", *Int. J. Computer Mathematics*, 93(4) 2016, 696–722. ([website](#))
- F. Barsotti, S. Sanfelici, "Market Microstructure Effects on Firm Default Risk Evaluation", *Econometrics*, 4(3) 2016. ([website](#))
- I. Curato, S. Sanfelici, "Measuring the leverage effect in a high frequency framework", in "The Handbook of High Frequency Trading", Greg N. Gregoriou Ed., 425–446, Elsevier, 2015.
- S. Sanfelici, I. Curato and M.E. Mancino "High frequency volatility of volatility estimation free from spot volatility estimates", *Quantitative Finance*, 15(8) (2015), 1–15. ([website](#))
- S. Sanfelici, A. Uboldi, "Assessing the quality of volatility estimators via option pricing", *Studies in Nonlinear Dynamics & Econometrics*, 18(2) (2014), 103–124. ([website](#)) ([website](#)).
- R. Kenmoe, S. Sanfelici, "An application of nonparametric volatility estimators to option pricing", *Decisions Econ. Finan.*, 37 (2014) 393–412. ([website](#)).
- F. Barsotti, S. Sanfelici, "Firm's Volatility Risk under Microstructure Noise", in "Mathematical and Statistical Methods for Actuarial Sciences and Finance", Marco Corazza and C. Pizzi Eds., Springer, 2013, 55–67. ([website](#)).
- M.E. Mancino, S. Sanfelici, "Estimation of Quarticity with High Frequency Data", *Quantitative Finance*, 12(4) (2012), 607–622. ([website](#)).
- S. Ogawa, S. Sanfelici, "An improved two-step regularization scheme for spot volatility estimation", *Economic Notes*, 2011, 40(3), 105–132. ([website](#)).
- M.E. Mancino, S. Sanfelici, "Multivariate volatility estimation with high frequency data using Fourier method", in "Handbook of Modeling High-Frequency Data in Finance", I. Florescu and F. Viens Eds., Wiley, New York, 2011, 243–294.
- M.E. Mancino, S. Sanfelici, "Estimating covariance via Fourier method in the presence of asynchronous trading and microstructure noise", *J. Fin. Econometrics*, 9(2) (2011), 367–408. ([website](#)).



M.E. Mancino, S. Sanfelici, "Covariance estimation and dynamic asset allocation under microstructure effects via Fourier methodology", in "Financial Econometrics Modeling", G. N. Gregoriou and R. Pascual Eds., Palgrave-MacMillan, London, UK, 2011, pp. 3-32.

M.E. Mancino, S. Sanfelici, "Robustness of Fourier Estimator of Integrated Volatility in the Presence of Microstructure Noise", *Computational Statistics & Data Analysis* 52 (2008) 2966-2989. ([website](#)).

S. Sanfelici, "Calibration of a nonlinear feedback option pricing model", *Quantitative Finance*, 7 (1) (2007), 95-110. ([website](#)).

S. Baccarin, S. Sanfelici, "Optimal impulse control on an unbounded domain with nonlinear cost functions", *Computational Management Science*, 3 (2006), 81-100. ([website](#)).

S. Sanfelici, "Galerkin Infinite Element Approximation for Pricing Barrier Options and Options with Discontinuous Payoff", *Decisions in Economics and Finance*, 27 (2) (2004), 125-151. ([website](#)).

S. Sanfelici, "A Numerical Method for Handling Asymptotic Boundary Conditions in Finance", *Proceedings della giornata di studio sul tema "Metodi Numerici per la Finanza"*, A. Basso, M. Corazza, M. Nardon, P. Pianca Eds., Centro stampa Ca' Foscari, Venezia, 2003, pp. 257-274. ([download](#)).

G. Fusai, S. Sanfelici, A. Tagliani, "Practical Problems in the Numerical Solution of PDE's in Finance", *Rendiconti per gli Studi Economici Quantitativi, Università Ca' Foscari Venezia*, Vol. 2001 (2002), 105-132. ([website](#)).

S. Sanfelici, "Numerical Simulations of fractionated electrograms and pathological cardiac action potential", *J. Theoretical Medicine*, (4) 3 (2002), 167-181. ([website](#)).

S. Sanfelici, "Convergence of the Galerkin Approximation of a Degenerate Evolution Problem in Electrophysiology", *Numer. Methods Partial Differential Equations*, (18) 2 (2002), 218-240. ([website](#)).

S. Sanfelici, "On the Galerkin Method for Semilinear Parabolic-Ordinary Systems", in "Partial Differential Equations: Theory and Numerical Solution", CHAPMAN & HALL/CRC Res. Notes Math. Ser., CRC Press LLC, Boca Raton, Florida, 2000, pp. 298-308. ([download](#)).

S. Sanfelici, "Semidiscretizzazione di Galerkin di Sistemi Parabolico-ordinari Semilineari", *Riv. Mat. Univ. Parma* (6) 1 (1998), 81-101.

### Monografie – Monographies

M.E. Mancino, M.C. Recchioni, S. Sanfelici, "Fourier-Malliavin Volatility Estimation. Theory and Practice", 2017, pp. 1-130, Springer - New York, ISBN: 978-3-319-50969-3. ([website](#)).

### Working Papers

E. Allaj, S. Sanfelici, "An Early Warning System for Identifying financial instability", Working Paper, 2020.

C. Cacciamani, F. Ielasi, and S. Sanfelici, "Structuring and Restructuring Corporate Debt", Working Paper, 2018.

J. Akahori, R. N. Kenmoe and S. Sanfelici, "Diffusion Estimation with Fourier Method", Working Paper, 2018.

F. Barsotti, S. Sanfelici, "Firm Volatility Risk and Default Probability Estimation under Market Microstructure Effects", Working Paper, 2014.

C. Guardasoni, S. Sanfelici, "Fast numerical pricing of barriers options under stochastic volatility and jumps", Working Paper, 2014.

A. Bacinello, P. Millossovich and S. Sanfelici, "Numerical study of a unit-linked life insurance contract", Working Paper, 2013.

F. Barsotti, S. Sanfelici, "Microstructure effect on firm's volatility risk", Working Paper del Dipartimento di Matematica per le Decisioni Università di Firenze, 5/2012, 2012. ([website](#)).

M.E. Mancino, S. Sanfelici, "Estimation of Quarticity with High Frequency Data", Working Paper del Dipartimento di Matematica per le Decisioni Università di Firenze, 6/2011, 2011. ([website](#)).

S. Ogawa, S. Sanfelici, "An improved two-step regularization scheme for spot volatility estimation", Working Paper del Dipartimento di Economia - Serie: Matematica - Università di Parma, Preprint 2/2008, 2008. ([download](#)).

M.E. Mancino, E. Rapini, S. Sanfelici, "Dynamic portfolio management: an application of Fourier method for covariance estimation", Working Paper, 2008. ([download](#)).

M.E. Mancino, S. Sanfelici, "Covariance estimation via Fourier method in the presence of asynchronous trading and microstructure noise", Working Paper del Dipartimento di Economia - Serie: Matematica - Università di Parma, Preprint 1/2008, 2008. ([download](#)).

M.E. Mancino, S. Sanfelici, "Robustness of Fourier Estimator of Integrated Volatility in the Presence of Microstructure Noise", Working Paper del Dipartimento di Matematica per le Decisioni Università di Firenze, 6/2006, 2006.

S. Sanfelici, "Numerical solution of an optimal impulse control problem on unbounded domain", Working Paper del Dipartimento di Economia Università di Parma, WP 2/2004, Marzo 2004. ([download](#)).

M.E. Mancino, S. Ogawa, S. Sanfelici, "A numerical study of the smile effect in implied volatilities induced by a nonlinear feedback model", Working Paper del Dipartimento di Economia Università di Parma, WP 1/2004, Gennaio 2004. ([download](#)).

S. Sanfelici, "Galerkin Finite Element Approximation for Pricing Barrier Options", Working Paper del Dipartimento di Economia Università di Parma, WP 5/2001, Ottobre 2001.

S. Sanfelici, "Comparison of Numerical Methods for the Approximation of Option Price", Working Paper del Dipartimento di Economia Università di Parma, WP 1/2001, Marzo 2001. ([download](#)).

S. Sanfelici, "State of the Art in Electronic Payment Systems", LEPEC Reports: Report N. 3, Joint Research Centre of the European Commission, September 1999.

S. Sanfelici, "State of the Art in Cryptographic Algorithms Used for Internet Security", Special Publication No. I.99.214, Joint Research Centre of the European Commission, December 1999.

## **Altre pubblicazioni – Other references**

### **Publicazioni – Publications**

S. Sanfelici, "A Computer Study of Electrograms Fractionation", in "Electrocardiology '98", Proceedings of the XXV International Congress on Electrocardiology, I. Préda Ed., World Scientific, Singapore, 1999, pp. 105-108.

S. Sanfelici, "Modelli Matematici del Comportamento Elettrico del Tessuto Cardiaco: Metodi Numerici ed Applicazioni", in "La Matematica nella Società e nella Cultura", Bollettino U.M.I. (8) 2-A Suppl. (1999), pp. 201-204.

S. Sanfelici, "Numerical Study of Activation in Normal and Diseased Myocardium", Studi Urbinati 1 (1997), 33-42. ([download](#)).

S. Sanfelici, "Numerical and Analytic Study of a Parabolic-Ordinary System Modelling Cardiac Activation Under Equal Anisotropy Conditions", Riv. Mat. Univ. Parma (5) 5 (1996), 143-157. ([download](#)).

G. Di Cola, S. Sanfelici, "Numerical Study of Activation in Anisotropic Myocardium Using Hodgkin-Huxley-Type Models", Medical & Biological Engineering & Computing, Vol 34, Supplement 1, Part 2, 1996, pp. 91-92.

G. Di Cola, E Macchi, S. Sanfelici, "Numerical Simulation of Activation in a Bidomain Model of Cardiac Muscle", Medical & Biological Engineering & Computing, Vol 34, Supplement 1, Part 2, 1996, pp. 87-88.

S. Sanfelici, "Numerical Simulation of Activation in Anisotropic Myocardium", in "Building Bridges in Electrocardiology", Proceedings of the XXII International Congress on Electrocardiology. A. van Oosterom, T. F. Oostendorp, G. J. H. Uijen. Eds., University Press Nijmegen - The Netherlands, 1995, pp. 164-165.

### Working Papers

S. Sanfelici, "Convergence of the Galerkin Approximation of a Degenerate Evolution Problem in Electrocardiology", Pubbl. IAN-CNR, Pavia, 1120, 1998, 1-24.

S. Sanfelici, "A Numerical Study of Electrograms Fractionation", Quaderno del Dipartimento di Matematica dell'Università degli Studi di Parma n. 177, Luglio 1998.

S. Sanfelici, "Convergence of the Galerkin Approximation to the Cardiac Bidomain Problem", Quaderno del Dipartimento di Matematica dell'Università degli Studi di Milano, n. 28/1997.

S. Sanfelici, "Numerical Study of Activation in a Bidomain Model of Normal and Diseased Myocardium", Quaderno del Dipartimento di Matematica dell'Università degli Studi di Parma n. 149, Settembre 1996. ([download](#)).

S. Sanfelici, "Numerical Simulation of the Depolarization Process in Anisotropic Myocardium", Quaderno del Dipartimento di Matematica dell'Università degli Studi di Parma n. 105, Luglio 1994.

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