

Athena Picarelli

Curriculum Vitae

Personal Data

Given Name: Athena

Family Name: Picarelli

Nationality: Italian

📍: Department of Economics, Ex-caserma Santa Marta, Via Cantarane 24, 37129, Verona

✉: athena.picarelli@univr.it

🌐: <https://sites.google.com/site/athenapicarelli/>

Current Position

Department of Economics, University of Verona

Full Professor

Oct24-

Positions held

Department of Economics, University of Verona

Associate Professor

Nov22-Sep24

Department of Economics, University of Verona

Temporary Assistant Professor (RTDB)

Nov19-Nov22

Department of Economics, University of Verona

Temporary Assistant Professor (RTDA)

Apr18-Oct19

Mathematics Department, Imperial College London

CFM research fellowship

Oct17-Mar18

Mathematics Department, University of Oxford

Post-doc research fellowship

Jan17-Sep17

St. Catherine's College, University of Oxford

Stipendiary Lecturer in Mathematics

Sep15-Aug16

Mathematics Department, University of Oxford

Nomura research fellowship

Jan15-Dec16

Research interests

Stochastic control, Optimal control problems, Dynamic Programming, first and second order Hamilton-Jacobi equations, Numerical schemes for Hamilton-Jacobi equations, Semi-Lagrangian schemes, Error estimates, Computational Finance, Machine Learning.

Education

Università di Roma "La Sapienza"

Master of Science in Applied Mathematics

March 2011

Università di Roma "La Sapienza"

Bachelor in Mathematics

January 2008

PhD thesis

Nov11-Apr15: ENSTA ParisTech & INRIA-Saclay Île de France, ITN SADCO Marie-Curie fellowship

Thesis: On some stochastic control problems under state constraints

Supervisors: Prof. Hasnaa Zidani, Prof. Olivier Bokanowski

Papers in peer-reviewed journals

1. E. Carlini, A. Picarelli, F. Silva. *A Semi-Lagrangian scheme for Bellman equations arising in stochastic exit time control problems*. Mathematics of Computations, forthcoming
2. K. Andersson, A. Gnoatto, M. Patacca, A. Picarelli. *A deep solver for BSDEs with jumps*. SIAM J. Financial Mathematics, Vo. 16 (3), pp.

- 875–911, (2025)
3. A. Gnoatto, S. Lavagnini, A. Picarelli. *Deep Quadratic Hedging*. Mathematics of Operations Research, Vo. 50 (4), pp. 2972–3009, (2024).
 4. A. Fina, A. Gnoatto, A. Picarelli. *Quantization of stochastic volatility models: numerical tests and an open source implementation*. Mathematics and Computers in Simulation, 225, pp. 29–51, (2024).
 5. A. Gnoatto, A. Picarelli, C. Reisinger. *Deep xVA solver – A Neural Network based Counterparty Credit Risk Management framework*. SIAM J. Financial Mathematics, Vo. 14 (1), (2023).
 6. P. Gajardo, C. Hermosilla, A. Picarelli. *On the set of robust sustainable thresholds*. Natural Resource Modeling, Vol. 34 (4), (2021).
 7. O. Bokanowski, A. Picarelli, C. Reisinger. *Stability results for second order backward differentiation schemes for parabolic Hamilton-Jacobi-Bellman equations*. Numerische Mathematik, Vol. 148 (1), pp. 187-222, (2021).
 8. G. Bouveret, A. Picarelli. *A Level-Set Approach for Stochastic Optimal Control Problems Under Controlled-Loss Constraints*. J. Optimization Theory Applications, Vol. 186 (3), pp.779-805, (2020).
 9. A. Picarelli, T. Vargiolu. *Optimal management of pumped hydroelectric production with state constrained optimal control*. J. Economic Dynamics and Control, Vol. 126, pp. 1-21, (2020).
 10. A. Picarelli, C. Reisinger. *Probabilistic error analysis for some approximation schemes to optimal control problems*. Systems & Control Letters, Vol. 137, pp. 1-11, (2020).
 11. A. Picarelli, C. Reisinger. *Duality-based a posteriori error estimates for some approximation schemes for optimal investment problems*. Computer and Mathematics with applications. Vol. 79, pp. 2099-2118, (2020).
 12. A. Picarelli, C. Reisinger, J. Rotaetxe. *Some regularity and convergence results for parabolic Hamilton-Jacobi-Bellman equations in bounded domains*. J. of Differential Equations. Vol. 268 (12), pp. 7843-7876, (2020).
 13. E. R. Jakobsen, A. Picarelli, C. Reisinger. *Improved order 1/4 convergence for piecewise constant policy approximation of stochastic control problems*. Electronic Communications in Probability, Vol. 24 (59), pp. 1-10, (2019).
 14. A. Kröner, A. Picarelli, H. Zidani. *Infinite horizon stochastic optimal control problems with running maximum cost*. SIAM J. Control and Optimization, Vol. 56 (5), pp. 3296-3319, (2018).
 15. O. Bokanowski, A. Picarelli, C. Reisinger. *High-order filtered schemes for time-dependent second order HJB equations*. ESAIM: M2AN, Vol. 54 (1), pp. 69-9, (2018).
 16. O. Bokanowski, A. Picarelli, H. Zidani. *State-constrained stochastic optimal control problems via reachability approach*. SIAM J. Control and Optimization, Vol. 54 (5), pp. 2568-2593, (2016).
 17. L. Grüne, A. Picarelli. *Zubov's method for controlled diffusions with state constraints*. Nonlinear Differential Equations and Applications, Vol. 22 (6), pp. 1765-1799, (2015).
 18. O. Bokanowski, A. Picarelli, H. Zidani. *Dynamic Programming and error estimates for stochastic control problems with maximum cost*. Applied Mathematics and Optimization, Vol. 71 (1), pp. 125-163, (2015).
 19. S. Cacace, E. Cristiani, M. Falcone, A. Picarelli. *A patchy dynamic programming scheme for a class of Hamilton-Jacobi-Bellman equations*. SIAM J. Scientific Computing, Vol. 34 (5) , pp. A2625-A2649, (2012).

Papers in peer-reviewed proceedings and book chapters

1. M. Assellaou, A. Picarelli. *A Hamilton-Jacobi-Bellman approach for the numerical computation of probabilistic state constrained reachable sets*. In Falcone et al. (Ed.) “Numerical methods for Optimal Control problems”. Springer INDAM Series, (2018).
2. A. Picarelli, C. Reisinger, J. Rotaetxe. *Boundary Mesh Refinement for Semi-Lagrangian Schemes*. In Kalise et al (Ed.), “Hamilton-Jacobi-Bellman Equations. Numerical Methods and Applications in Optimal Control” (pp. 167–188). Radon Series on Computational and Applied Mathematics, De Gruyter (2018).
3. A. Festa, R. Guglielmi, C. Hermosilla, A. Picarelli, S. Sahu, A. Sassi, F. Silva. *Recent results in Hamilton-Jacobi-Bellman theory*. Book chapter in “Optimal Control Design: Novel Directions and Applications”. Springer, Lecture notes in Mathematics. DOI: 10.1007/978-3-319-60771-9, (2017).

Preprints and ongoing works

1. A. Gnoatto, K. Oberpriller, A. Picarelli. *Error estimates for the deep BSDE solver with jumps*. Submitted.
2. F. Baschetti, A. Gnoatto, A. Picarelli. *An Optimal Energy Production Problem with Energy Source Switching and Load Following Nuclear Power Plants*. Ongoing work.
3. A. Picarelli, M. Scaratti, J. Tam. *Extended mean field control: a global numerical solution via finite-dimensional approximation*. Submitted.

Research visits

Université Paris 7 (France)

Visiting Prof. Chassagneux and Prof. Bokanowski

Mar 2024

Universidad Técnica Federico Santa María, Valparaíso (Chile)

Visiting Prof. Hermosilla

Oct 2019

Università degli studi di Padova (Italy)

Visiting Prof. Bardi and Prof. Cesaroni

Nov13–Feb14

Supervisions

PhD Supervisions: Marco Scaratti (ongoing, University of Verona), Simone Vecchi (ongoing, University of Verona), Julen Rotaetxe ("Boundary treatment and multigrid preconditioning for semi-Lagrangian schemes applied to Hamilton-Jacobi-Bellman equations", University of Oxford, co-supervised with Prof. Reisinger, 2016)

MSc Supervisions: more than 20 MSc projects for the CdLM in Banking and Finance (Università di Verona), 1 MSc project for the CdLM in Economics (Università di Verona), 1 MSc project for the MSc in Mathematical Finance (University of Oxford).

Administration and Collective responsibilities

Coordinator of the PhD program in Economics and Finance, Università di Verona.	Oct 24 -
Associate editor for the SIAM J. Financial Mathematics.	Jan 23 -
Associate editor for the J. of Computational Finance.	Jul 18 -
Member of the Scientific Committee, International Conference on Computational Finance, University of Oxford.	Sep 2026
Co-organizer, Workshop "Numerics for Controls, PDEs and Images", Politecnico di Torino.	Dec 2025
Local organizer and member of the Scientific Committee, 12th General AMAMEF Conference, Università di Verona.	June 2025
Local organizer, Verona Workshop on Financial Mathematics, Università di Verona.	Dec 2022
Local organizer, XXII Workshop on Quantitative Finance, Università di Verona (online).	Jan 2021
Co-organizer, Mathematical Finance internal seminar, University of Oxford.	Sep-Dec 2016
Co-organizer, ITN SADCO 'Doctoral Days', ENSTA ParisTech.	June 2013
Co-organizer of the special session 'Modeling and Computational Methods for Financial Applications'	Jul 2018
Viennese Conference on Optimal Control and Dynamic Games (ORCOS), TU Wien.	
Co-organizer of the special session "Probabilistic Methods for Energy Transition"	Apr 2024
4th Italian Meeting on Probability and Mathematical Statistics, Rome.	

Referee for: Mathematical Finance, SIAM Journal on Control and Optim., SIAM Journal on Scientific Computing, Quantitative Finance, SIAM J. Financial Mathematics, Operations Research, Electronic Journal of Probability, Journal of Optimization Theory and Applications, Communications on Pure and Applied Analysis, BIT Numerical Mathematics, Applied Mathematics and Optimization, Set-valued and Variational Analysis, IMA Journal of Numerical Analysis, Numerische Mathematik.

PhD jury: Thesis of Dr. Lorenzo Croissant (Université Paris Dauphine, 2023), Thesis of Dr. Maddalena Muttoni (Università di Padova, 2024)

Recruiting: Tenured Assistant Professor (RTT) (LUISS, 2024), Post-doc fellowship AdR 4398 (Università di Verona, 2023), Post-doc fellowship AdR 4192 (Università di Verona, 2023), Post-doc fellowship AdR 4191 (Università di Verona, 2023), Tenured Assistant Professor (RTDB) 2023rtdb003 (Università di Verona, 2023), PhD admissions (Università di Verona, 2023)

Selected invited conference and seminar talks

15th AIMS Conference, Athens, Greece (invited in a thematic session).	Scheduled
Workshop "Mathematics and Machines", Leiden, The Netherlands.	Scheduled
Workshop "Leaning on Random Towers", Scuola Normale Superiore di Pisa, Italy.	May 2025
Workshop "Mean Field Games, Mean Field Control and Applications to Economics and Finance", Pavia, Italy.	Apr 2025
LSE Joint Risk & Stochastic and Financial Mathematics seminar, London, UK.	Feb 2025
2nd Green Finance Workshop, Università di Roma Tor Vergata, Roma, Italy.	Feb 2025
Workshop "Uncertainty and Risk in Financial Mathematics", Università di Milano Statale, Milano, Italy.	Dec 2024
Seminaire du GdT en Probabilité et Analyse Numérique, Université Paris 7, Paris, France.	Mar 2024
SIAM seminar series (online).	Jan 2024
LMU Workshop, Munich, Germany.	Nov 2023
The 11th AMAMEF Conference, Bielefeld, Germany (invited in an invited thematic session).	June 2023
Workshop "Nonlinear PDEs: theory, numerics and applications - in memory of Maurizio Falcone", Roma, Italy.	May 2023
Seminaire d'Analyse Numérique, INSA Rouen, France.	Oct 2022
Workshop "Machine Learning for PDEs", LSE & Imperial College, London, UK.	Sep 2022
Workshop "New directions in stochastic control", Imperial College, London, UK.	Jul 2022
3rd Italian Meeting on Probability and Mathematical Statistics, Bologna, Italy (invited in a thematic session).	Jun 2022
Conference "Theory and Numerics of Mean Field Games and Hamilton-Jacobi equations", Roma, Italy.	Jun 2022

<i>The 5th Women in Quantitative Finance Hybrid Conference (online), London, UK.</i>	Mar 2022
<i>Control and Optimisation Seminar (online), Imperial College, UK.</i>	Mar 2022
<i>Probability and Finance Seminar (online), Università degli Studi di Padova, Italy.</i>	Dec 2021
<i>Scientific Computation Seminar (online), University of Nottingham, UK.</i>	Oct 2020
<i>Differential Numerical Modeling Seminar, Università di Roma "La Sapienza", Italy.</i>	Dec 2019
<i>Mathematics Seminar, Univ. Técnica F. Santa Maria, Valparaíso, Chile.</i>	Sep 2019
<i>Workshop "Control of State-Constrained Dynamical Systems", Univ. Técnica F. Santa Maria", Valparaíso, Chile.</i>	Sep 2019
<i>Differential Numerical Modeling Seminar, Università di Roma "La Sapienza", Italy.</i>	Mar 2019
<i>Stochastic Finance Seminar, University of Warwick, UK.</i>	Mar 2019
<i>Risk & Stochastic Conference, London, UK.</i>	Apr 2018
<i>Workshop "Stochastic analysis applied to economics, finance and insurance", University of Santiago, Chile.</i>	Mar 2018
<i>Mathematical and Computational Finance Seminar, University of Oxford, UK.</i>	Jan 2018
<i>Differential Equations and their Applications Seminar, Università di Padova, Italy.</i>	Jan 2018
<i>Verona-Paris Conference on Stochastic Modeling, Verona, Italy.</i>	Dec 2017
<i>Numerical Analysis Seminar, University of Sussex, UK.</i>	Nov 2017
<i>Numerical Analysis Seminar, University of Oxford, UK.</i>	Oct 2017
<i>Mathematical Finance Seminar, Politecnico di Milano, Italy.</i>	Oct 2017
<i>Risk & Stochastics and Financial Mathematics Seminar, LSE, UK.</i>	Jan 2017
<i>Workshop "Numerical Methods for HJ equations in Optimal Control", RICAM, Austria.</i>	Nov 2016
<i>Workshop "Analysis and Applications of Stochastic Systems", IMPA, Brasil.</i>	Mar 2016
<i>Numerical Analysis Seminar, University of Durham, UK.</i>	Jan 2016
<i>Chilean Workshop on Numerical Analysis of PDEs, Universidad de Concepcion, Chile (invited in a thematic session).</i>	Jan 2016
<i>9th Oxford-Princeton Workshop on Financial Mathematics, University of Princeton, USA.</i>	Nov 2015
<i>Workshop "New Perspectives in Optimal Control and Games", Rome, Italy.</i>	Nov 2014
<i>Probability Seminar, Université d'Evry, France.</i>	Feb 2013

Awards and grants

PRIN PNRR 2022,

Local coordinator and vice-PI, 224.563 EUR

2023

Project: "Probabilistic Methods for Energy Transition"

INDAM (Italian Institute of High Mathematics) grant for young researchers, Group GNCS

PI, 1000 EUR

2015

Project: "Error estimates and high-order numerical schemes for second-order HJB equations"

Visiting Program, cat. B, University of Verona

480 EUR

2023

Visiting: Prof. Christoph Reisinger

Visiting Program, cat. B, University of Verona

2000 EUR

2018

Visiting: Dr. Geraldine Bouveret

Italian scientific habilitation (ASN) to the role of Full professor

Sector: 13/D4 (Mathematical Methods for Economics and Finance)

2023

Italian scientific habilitation (ASN) to the role of Associate professor

Sectors: 01/A3 (Analysis, Probability and Statistics), 01/A5 (Numerical Analysis)

2023

Qualification aux fonctions de Maître de Conférences

Sectors: Mathématiques, Mathématiques Appliquées

2016

Teaching

Stochastic Optimization and Control

Lectures, PhD in Mathematics and Data Analytics for Finance, Università di Verona

a.y. 2023/24, 2024/25, 2025/26

Probability theory

Lectures, PhD in Statistics, Università di Padova

a.y. 2019/20, 2023/24, 2024/25, 2025/26

Mathematics

Lectures, PhD in Economics, Università di Verona

a.y. 2018/19, 2019/20

Mathematical and computational methods for Business and Economics

Lectures, MSc Economics and Data Analysis, Università di Verona

a.y. 2020/21, 2021/22, 2022/23, 2023/24, 2024/25, 2025/26

Asset Pricing Models

Lectures, MSc in Banking and Finance, Università di Verona

a.y. 2020/21, 2021/22, 2022/23

Computational Methods for Finance

Lectures, MSc in Banking and Finance, Università di Verona

a.y. 2020/21, 2021/22

Mathematical Models for business and economics

Lectures, MSc Economics and Data Analysis, Università di Verona

a.y. 2018/19, 2019/20

Finite difference methods

Lectures, MSc in Mathematical and Computational Finance, University of Oxford

a.y. 2016/17

Financial Markets Models

Lectures, BSc Economics and Business, Università di Verona

a.y. 2022/23

Mathematics

Lectures, BSc Economics and Business, Università di Verona

a.y. 2023/24, 2024/25, 2025/26

Calculus, Differential equations, Probability, Calculus of Variations

Tutorials, St. Catherine's College (University of Oxford)

a.y. 2015/16

Introduction to Stochastic control (Prof. Zhou)

Tutorials, MSc in Mathematical and Computational Finance, University of Oxford

a.y. 2015/16

Numerical methods for PDEs in finance (Prof. Bokanowski)

Tutorials, M2 en Modélisation Aléatoire, ENSTA ParisTech

a.y. 2012/13

Languages

	Writing skill	Reading skill	Speaking skill
Italian	Mother tongue		
English	Advanced	Advanced	Advanced
French	Advanced	Advanced	Advanced
Spanish	Beginner	Beginner	Beginner

Verona, May 12, 2026

