Angela Martiradonna

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Main Research Interests

Models for the management and control of invasive species

Predictive models for organic carbon dynamics in soil

Sustainable management models for fishery resources

Positive numerical integrators for biochemical systems

Current Position

Fixed-term Researcher type B at the Department of Economics, University of Foggia, since 1/03/2024.
SECS-S/06 - Mathematical Methods for Economics and Actuarial and Financial Sciences.

Education

Ph.D. in Mathematics obtained in 2017 from the University of Bari. Thesis: *Fish population dynamics with nonlinear stock-recruitment renewal conditions*.

Master's Degree in Mathematics obtained in 2012 from the University of Bari. Thesis: *Modelli di dinamica delle popolazioni ittiche: stima dei fattori di incremento e decremento dello stock*.

Bachelor's Degree in Mathematics obtained in 2008 from the University of Bari. Thesis: *Tecniche numeriche per interpolazione in due dimensioni*.

Previous Positions

2023-2024: Fixed-term Researcher at the Institute for Applied Mathematics M. Picone (IAC) - CNR, Bari

2020-2023: Fixed-term Researcher at the Department of Mathematics, University of Bari.

2019-2020: Fixed-term Researcher at IAC-CNR, Bari.

2016-2019: Research Fellow at IAC-CNR, Bari.

2012: Scientific Collaborator at COISPA T&R, Bari.

Main Teaching Assignments

A.Y. 2023-2024. Mathematics, 8 cfu. Economics and Business Administration degree programmes, University of Foggia.

A.Y. 2021-2022, 2022-2023. Mathematics, 8 cfu. Environmental Sciences degree programme, University of Bari.

A.Y. 2021/2022. Exercises for Programming and Computing Laboratory, 30 hours. Chemistry degree programme, University of Bari.

Funded Research Projects

Principal Investigator of the following projects:

Modelli differenziali per la salvaguardia della biodiversità minacciata dalle specie invasive nelle aree protette. Utilizzo di dati satellitari per l'analisi di scenario e il controllo ottimo nel Parco Nazionale dell'Alta Murgia. REFIN - POR PUGLIA FESR-FSE 2014/2020

- *Positive mass-preserving splitting integrators for biochemical systems*. Short Term Mobility 2018 - CNR.

- *Integratori numerici positivi non Newtoniani per sistemi differenziali*. Finanziamento Giovani Ricercatori 2017-2018, GNCS INDAM.

Collaborative activities in more than 10 national and international projects. Currently involved in:

Optimal management of water resource in presence of heterogeneous stakeholders and seasonal effects: a game theoretic approach. University Research Project - PRA year 2022, University of Foggia.

Restore4Cs. Horizon 2.5 Program - Climate, Energy, and Mobility.

Scientific Collaborations and Working Groups

Collaboration agreement with Fondazione COISPA ETS, Bari, since 3/02/2023.

Participation in the LifeWatch ERIC infrastructure, since 2019.

Member of the GNCS-INDAM group, since 2019.

Visiting

21-day research stay at Universidad Politécnica de Valencia, Spain (2019).

3-month research stay at the Institute of Mathematical Statistics and Applied Mathematics, Bucharest, Romania (2014)

Conference Presentations and International Meetings

Participation in several national and international conferences. Main invited talks:

Kick-off meeting of the PRIN 2022 PNRR project *Mathematical Modelling for a Sustainable Circular Economy in Ecosystems*. University of Perugia, February 29 - March 1, 2024.

MathAIEOapp Workshop, July 5-7, 2023, Bari, Italy

MSE Workshop, May 18-19, 2023, Naples, Italy

INDAM Research Unit Day, February 21, 2023, Bari, Italy

SciCADE 2022, University of Iceland, Reykjavík, July 25 – 29, 2022.

SIMAI 2020 + 2021, August 3, 2021, Parma, Italy (online).

13th ISAAC Congress, August 2–August 6, 2021, Ghent, Belgium (online).

LifeWatch Workshop, May 20-21, 2021, online.

Organizing

Member of the organizing committee for:

SDS2024, Monopoli (BA), June 11-14, 2024.

Workshop: *Measuring the gender gap in academia*. University of Bari, January 18, 2024.

Second FuturoINAREA Symposium - Wonder Poster, BARICODE 2023, Bari, October 23-25, 2023

First FuturoINAREA Symposium, CNR Bari, May 18, 2022.

WORKSHOP: Patankar-Type Integrators for Biochemical Systems. University of Bari, September 27, 2021.

Mini-symposium *Advanced mathematical approaches for ecological modelling* in SIAM GS21, June 21-24, 2021, online.

Scientific Production

Co-author of: 12 publications in international scientific journals, 3 contributions in books, 10 abstracts in indexed conference proceedings, 6 technical reports, 3 software, 2 outreach articles.
Main publications list: `https://scholar.google.it/citations?user=41_o3hcAAAAJ&hl=it`.

Main scientific publications of the last five years:

- Izgin, T., Kopecz, S., Martiradonna, A., & Meister, A. (2023). On the dynamics of first and second order GeCo and gBBKS schemes. Applied Numerical Mathematics, 193, 43-66.

- Baker, C. M., Blonda, P., Casella, F., Diele, F., Marangi, C., Martiradonna, A., ... & Tarantino, C. (2023). Using remote sensing data within an optimal spatiotemporal model for invasive plant management: the case of Ailanthus altissima in the Alta Murgia National Park. Scientific Reports, 13(1), 14587.

- Diele, F., Luiso, I., Marangi, C., & Martiradonna, A. (2023). SOC-reactivity analysis for a newly defined class of two-dimensional soil organic carbon dynamics. Applied Mathematical Modelling, 118, 1-21.

- Marangi, C., Martiradonna, A., & Ragni, S. (2023). Optimal resource allocation for spatiotemporal control of invasive species. Applied Mathematics and Computation, 439, 127614.

- Diele, F., Martiradonna, A., & Trenchea, C. (2022). Stability and errors estimates of a second-order IMSP scheme. Discrete and Continuous Dynamical Systems-S, 15(12), 3645-3665.

- Diele, F., Luiso, I., Marangi, C., Martiradonna, A., & Woźniak, E. (2022). Evaluating the impact of increasing temperatures on changes in Soil Organic Carbon stocks: sensitivity analysis and non-standard discrete approximation. Computational Geosciences, 26(5), 1345-1366.

- Diele, F., Marangi, C., & Martiradonna, A. (2021). Non-standard discrete RothC models for soil carbon dynamics. Axioms, 10(2), 56.

- Martiradonna, A., Colonna, G., & Diele, F. (2020). GeCo: Geometric Conservative nonstandard schemes for biochemical systems. Applied Numerical Mathematics, 155, 38-57.

- Baker, C. M., Diele, F., Lacitignola, D., Marangi, C., & Martiradonna, A. (2019). Optimal control of invasive species through a dynamical systems approach. Nonlinear Analysis: Real World Applications, 49, 45-70.

Bari, April 19, 2024