<div align="right">

Ángeles Martínez Calomardo

Curriculum Vitae

</div>

Personal data and Education

Work address Dipartimento di Matematica e Geoscienze, Università di Trieste, Via Valerio, 12, Trieste.

ORCID 0000-0003-4826-1114

Scopus ID 13104048700

1998 **Ph.D in Mathematics**, *Polytechnic University of Valencia*, Spain, December.

1993 **Laurea Specialistica (M.Sc.) in Computer Science**, *Polytechnic University of Valencia*, Spain, July 1993. .

Academic positions

May 22 – **Professore Associato (present position)**, *Dipartimento di Matematica e Geoscienze, Università di Trieste*.

2019–22 **Ricercatore di tipo B**, *Dipartimento di Matematica e Geoscienze, Università di Trieste*.

2016–19 **Ricercatore di tipo A**, *Dipartimento di Matematica "Tullio Levi-Civita", Università di Padova*.

Institutional duties

2021 – Member of the board of the Ph.D in *Earth Science, Fluid-Dynamics, and Mathematics. Interactions and Methods.*

Scientific Activity (years 2018 – 2022)

Project involvement as PI or participant

2022-2025 Participation to the EU-PNRR project: "iNEST-Interconnected Nord-Est Innovation Ecosystem", project number ECS_00000043, Spoke number 9, leadered by SISSA.

2022-2023 Participation to the BIRD project: " Linear and nonlinear algebra in physics-informed neural networks with application to real life models" of the Department of Civil, Enviromental and Architectural Engineering, University of Padova.

2022-2023 Participation to the ISCRA (Italian SuperComputing Resource Allocation) project PRESTO (Parallel PREconditioners for Navier-STOkes equations).

2020-2021 Participation to the GNCS project:"Ottimizzazione e algebra lineare avanzata per problemi governati da PDE".

2021-2022 Participation to the ISCRA project ADAMG.

2020-2021 Participation to the ISCRA project EXAAMG.

2019-2020 Participation to the GNCS project:"Tecniche innovative e parallele per sistemi lineari e non lineari di grandi dimensioni, funzioni ed equazioni matriciali ed applicazioni".

2018-2020   Participation to the project funded by the Spanish University: "Problemas matriciales: computación, teoría y aplicaciones". Coordinator prof. José Mas Marí.

2019-2020   Participation to the project *Matrix-Free Preconditioners for Large-Scale Convex Constrained Optimization Problems (PRECOOP)* granted by the CARIPARO foundation in the framework of the "Visiting Programme".

2018-2019   Participation to the GNCS project: "Metodi numerici per equazioni lineari, non lineari e matriciali con applicazioni".

List of Publications

Preprints

[1] L. Bergamaschi, M. Ferronato, C. Janna and A. Martínez, "Parallel polynomial preconditioners for Finite Element discretizations of Fractured Models", *In preparation, 2021*

[2] A. Martínez, M. Yousefi. "Deep neural network training with stochastic Quasi-Newton methods: an experimental study", *In preparation, 2021*

Journal papers

2022   [3] A. Carreño, L. Bergamaschi, D. Ginestár, A. Martínez and G. Verdú. "Strategies of preconditioner updates for sequences of linear systems associated with the neutron diffusion". *Computational and Mathematical Methods*, vol. 2022, Article ID 3884836, 13 pages, 2022. https://doi.org/10.1155/2022/3884836.

2021   [4] L. Bergamaschi and A. Martínez, "Parallel Newton–Chebyshev polynomial preconditioners for the conjugate gradient method", *Computational and Mathematical Methods*, 2021, 3(6), e1153.

[5] L. Bergamaschi, J. Gondzio, A. Martínez, J.W. Pearson and S. Pougkakiotis, "A New Preconditioning Approach for an Interior Point-Proximal Method of Multipliers for Linear and Convex Quadratic Programming", *Numerical Linear Algebra with Applications*, 28(4), **e2361**, 2021

2020   [6] L. Bergamaschi, J. Marín and A. Martínez, "Compact Quasi-Newton preconditioners for SPD linear systems", *Numerical Linear Algebra with Applications*, 27(6), **e2322**, 2020

[7] A. Martínez, F. Piazzon, A. Sommariva and M. Vianello. "Quadrature-based polynomial optimization", *Optimization Letters*, 14:1027–1036, 2020

2019   [8] A. Carreño, L. Bergamaschi, A. Martínez, A. Vidal-Ferrándiz, D. Ginestar and G. Verdú Block preconditioning matrices for the Newton method to compute the λ-modes associated with the neutron diffusion equation. *Mathematical and Computational Applications*, 24(1):1–14, 2019.

[9] S. De Marchi, A. Martínez and E. Perracchione. "Fast and stable rational RBF-based partition of unity interpolation". *J. Comput. Appl. Math.*, 349:331–343, 2019

[10] S. De Marchi, A. Martínez, E. Perracchione and M. Rossini. "RBF-based partition of unity method for elliptic PDEs: Adaptivity and stability issues via Variably Scaled Kernels". *Journal of Scientific Computing*, 79(1):321–344, 2019.

[11] L. Bergamaschi, E. Facca, A. Martínez, and M. Putti. "Spectral preconditioners for the efficient numerical solution of a continuous branched transport model". *J. Comput. Appl. Math.*, 354:259–270, 2019.

2018 [12] L. Bergamaschi, V. De Simone, D. di Serafino, and A. Martínez. "BFGS-like updates of constraint preconditioners for sequences of KKT linear systems". *Numer. Lin. Alg. Appl.*, 25(5):e2144:1–19, 2018.

Book chapters and Proceedings

2022 [13] A. Martínez, M. Yousefi. "A Stochastic modified limited memory BFGS for training deep neural networks", Lecture Notes in Networks and Systems, 2022, 507 LNNS, pp. 9-28.

2019 [14] L. Bergamaschi and A. Martínez. "Generalized block tuned preconditioners for SPD eigensolvers". *Springer INdAM Series*, 30:237–252, 2019

2018 [15] L. Bergamaschi and A. Martínez. "Spectral acceleration of parallel iterative eigensolvers for large scale scientific computing'. *Advances in Parallel Computing*, 32:107–116, 2018.

Awards

2022 In 2022, the paper *Martinez, A., Piazzon, F., Sommariva, A., Vianello, M.; Quadrature-based polynomial optimization.* has received the **best paper award** among all articles published in 2020 on the journal *Optimization Letters*.

Other scientific activities

Talks and conference participation

2022 *16th International Conference on Signal Image Technology and Internet-Based Systems (SITIS 2022), Dijon, France.* Title of the Talk: **A stochastic nonmonotone trust-region training algorithm for image classification.** presented at the NAMDAC Workshop: Numerical Algorithms and Methods for Data Analysis and Classification, October 2022.

2022 *ALAMA 2022 – ALN2gg*, International meeting on Linear Algebra, Matrix Analysis and Applications, Alcalà de Henares (Spain), June 1–3, 2022. .

2021 *Invited talk at the 8th ECM* Portoroz, Slovenia, within the minisymposium: *Matrix Computations and Numerical (Multi)Linear Algebra with Applications.* Title of the talk: **Parallel Newton-Chebyshev Polynomial Preconditioners**, June 2021

2019 *Invited talk at the 9th ICIAM Conference, Valencia.* Title of the talk: **Optimal Transport Problem Solution: Preconditioning Strategies for the Newton Method**.

17th EUROPT: Workshop on Advances in Continuous Optimization, Edinburgh.

19th Int. Conference on Computational and Mathematical Methods for Science and Engineering, Rota (Cadice), July 2019.

2018 *Invited talk at the Polytechnic University of Valencia.* Title of the talk: **Preconditioning strategies for SPD eigenvalue problems**, Valencia, December 2018.

16th EUROPT: Workshop on Advances in Continuous Optimization, Almeria, July 2018.

18th Int. Conference on Computational and Mathematical Methods for Science and Engineering, Rota (Cadice). Title of the Talk: **Generalized block tuned preconditioners for sequences of shifted linear systems: application to SPD eigensolvers.**

6th IMA Conference on Numerical Linear Algebra and Optimization, Birmingham. Title of the Talk: **Generalized block tuned preconditioners for SPD eigensolvers.**

Seminari Padovani di Analisi Numerica (SPAN), Padova, May 2018. Title of the Talk: **Generalized Block Tuned Preconditioners for SPD eigensolvers.**

Invited talk: **Low-rank preconditioner updates for linear systems and eigenvalue problems.** Department of Applied Mathematics, Polytechnic University of Valencia, Spain. February 2018 .

Research visits

2022 **School of Maths, University of Edinburgh**, *UK, Polynomial preconditioners for block linear systems. Research funded by the European Supercomputing Resources allocation programme **HPC-Europa3***, 10 days.

2019 **School of Maths, University of Edinburgh**, *UK, Matrix-Free Preconditioners for Large-Scale Convex Constrained Optimization Problems*, 2 weeks.

2018 **Department of Applied Mathematics, UPV**, *Valencia, Spain, Block Preconditioners for the modified block Newton method to compute the λ-modes associated with the neutron diffusion equation.*, 5 days.

2018 **Department of Applied Mathematics, UPV**, *Valencia, Spain, Preconditioners for Inexact Newton method based on compact representations of Broyden class updates*, 10 days.

Conference organization

I have taken active part in the organizing committee of the following schools/workshops:

2020 Workshop: Numerical Linear Algebra for PDEs and Large Scale Optimization, Padova, February 17–18

2019 Miniworkshop within the ICIAM Conference held in Valencia: Preconditioners for Linear Algebra Methods in Large Scale Scientific Computing.

Workshop: Advances in Linear Algebra and Huge-Scale Optimization, Edinburgh, July

2018 Program Chair of Topic: Parallel Numerical Methods and Applications for the *Euro-Par 2018 24th International European Conference on Parallel and Distributed Computing*, Turin, 27th-31st Aug. 2018

2018 Workshop Seminari Padovani di Analisi Numerica (SPAN 2018), held in Padova (Italy) on May 3–4, 2018.

2018 Workshop Due giorni di Algebra Lineare Numerica e Applicazioni, held in Padova (Italy) on February 8–9, 2018.

Member of Editorial Boards

2018 Guest Editor of the Special Issue of Vol.12 (2019) of the journal *Dolomites Research Notes on Approximation*: Proceedings of the Workshop SPAN 2018

Trieste, December 14, 2022   Ángeles Martínez Calomardo