
Principali linee di ricerca

- Analisi di problemi di complementarità lineare ed absolute value equations. Sviluppo di nuovi metodi numerici di soluzione.
- Sviluppo di reti neurali per problemi differenziali.
- Ottimizzazione topologica e di forma.

Incarichi ed attività

- 2022 - presente **Ricercatore a t.d. tipologia B, SSD MAT/08**, *Università di Modena e Reggio Emilia*.
- 2018 – 2022 **Assegnista di Ricerca, SSD MAT/08**, *Università di Modena e Reggio Emilia*.
- 2017 **Research Associate**, *University of Wisconsin-Madison, Madison (WI), U.S.A.*
- 2015 **Honorary Associate/Fellow (Visiting Scholar)**, *University of Wisconsin-Madison, Madison (WI), U.S.A.*
- 2014 – 2016 **Dottorato di Ricerca in Analisi Numerica**, *Scuola di Dottorato in Ingegneria Industriale e del Territorio “Enzo Ferrari”, Università di Modena e Reggio Emilia.* , **Titolo tesi:** *Iterative methods for nonlinear diffusion problems*, **Advisor:** Prof. E. Galligani.

Pubblicazioni

- [1] D. Carbonaro, F. Mezzadri, N. Ferro, G. De Nisco, A. L. Audenino, D. Gallo, C. Chiastra, U. Morbiducci, and S. Perotto. Design of innovative self-expandable femoral stents using inverse homogenization topology optimization. *Computer Methods in Applied Mechanics and Engineering*, 416(116288), 2023.
- [2] F. Mezzadri, J. Gasick, and X. Qian. A framework for physics-informed deep learning over freeform domains. *CAD Computer Aided Design*, 160(103520), 2023.
- [3] F. Mezzadri. A modulus-based formulation for the vertical linear complementarity problem. *Numer. Algorithms*, 90(4):1547–1568, 2022.
- [4] F. Mezzadri and E. Galligani. A generalization of the equivalence relations between modulus-based and projected splitting methods. *Ann. Univ. Ferrara*, 68(2):417–439, 2022.

- [5] F. Mezzadri and E. Galligani. Projected splitting methods for vertical linear complementarity problems. *J. Optim. Theory Appl.*, 193(1-3):598–620, 2022.
- [6] F. Mezzadri and X. Qian. Density gradient-based adaptive refinement of analysis mesh for efficient multiresolution topology optimization. *Int. J. Numer. Meth. Eng.*, 132(2):465–504, 2022.
- [7] F. Mezzadri and E. Galligani. A generalization of irreducibility and diagonal dominance with applications to horizontal and vertical linear complementarity problems. *Linear Algebra Appl.*, 621:214–234, 2021.
- [8] F. Mezzadri and E. Galligani. Modulus-based matrix splitting methods for a class of horizontal nonlinear complementarity problems. *Numer. Algorithms*, 87:667–687, 2021.
- [9] F. Mezzadri and E. Galligani. A modulus-based nonsmooth Newton’s method for solving horizontal linear complementarity problems. *Optim. Lett.*, 15:1785–1798, 2021.
- [10] F. Mezzadri. Modulus-based synchronous multisplitting methods for solving horizontal linear complementarity problems on parallel computers. *Numer. Linear Algebra Appl.*, 27(e2319):1–15, 2020.
- [11] F. Mezzadri. On the solution of general absolute value equations. *Appl Math. Lett.*, 107(106462):1–7, 2020.
- [12] F. Mezzadri and E. Galligani. Modulus-based matrix splitting methods for horizontal linear complementarity problems. *Numer. Algorithms*, 83:201–219, 2020.
- [13] F. Mezzadri and E. Galligani. On the convergence of modulus-based matrix splitting methods for horizontal linear complementarity problems in hydrodynamic lubrication. *Math. Comput. Simulation*, 176:226–242, 2020.
- [14] F. Mezzadri and X. Qian. A second-order measure of boundary oscillations for overhang control in topology optimization. *J. Comput. Phys.*, 410:1–32, 2020.
- [15] F. Mezzadri. On the equivalence between some projected and modulus-based splitting methods for linear complementarity problems. *Calcolo*, 56(41):1–20, 2019.
- [16] F. Mezzadri and E. Galligani. A nonlinearity lagging method for non-steady diffusion equations with nonlinear convection terms. *Adv. Comput. Math.*, 45:1185–1220, 2019.
- [17] F. Mezzadri and E. Galligani. Splitting methods for a class of horizontal linear complementarity problems. *J. Optim. Theory Appl.*, 180:500–517, 2019.
- [18] F. Mezzadri, V. Bouriakov, and X. Qian. Topology optimization of self-supporting support structures for additive manufacturing. *Addit. Manuf.*, 21:666–682, 2018.
- [19] F. Mezzadri and E. Galligani. An inexact Newton method for solving complementarity problems in hydrodynamic lubrication. *Calcolo*, 55(1), 2018.
- [20] F. Mezzadri and E. Galligani. A Lagged Diffusivity Method for reaction-diffusion-convection equations with Dirichlet boundary conditions. *Appl. Numer. Math.*, 123:300–319, 2018.

- [21] F. Mezzadri and E. Galligani. On the Lagged Diffusivity Method for the solution of nonlinear finite difference systems. *Algorithms*, 10(88), 2017.
- [22] F. Mezzadri and E. Galligani. A Chebyshev technique for the solution of optimal control problems with nonlinear programming methods. *Math. Comput. Simulation*, 121:95–108, 2016.

Ultimo aggiornamento: 21/06/2024