

List of Publications

- [23] M. Khamlich, F. Pichi, M. Girfoglio, A. Quaini, and G. Rozza. Optimal Transport-Based Displacement Interpolation with Data Augmentation for Reduced Order Modeling of Nonlinear Dynamical Systems. arXiv:2411.08750, 2024, [2411.08750](#). doi:[10.48550/arXiv.2411.08750](#).
- [22] S. Rathore, P. C. Africa, F. Ballarin, F. Pichi, M. Girfoglio, and G. Rozza. Projection-based Reduced Order Modelling for Unsteady Parametrized Optimal Control Problems in 3D Cardiovascular Flows. arXiv:2410.20828, 2024, [2410.20828](#). doi:[10.48550/arXiv.2410.20828](#).
- [21] I. C. Gonnella, M. Khamlich, F. Pichi, and G. Rozza. A stochastic perturbation approach to nonlinear bifurcating problems. arXiv:2402.16803, 2024, [2402.16803](#). doi:[10.48550/arXiv.2402.16803](#).
- [20] M. Hirsch, F. Pichi, and J. S. Hesthaven. Neural empirical interpolation method for nonlinear model reduction. arXiv:2406.03562, 2024, [2406.03562](#).
- [19] I. C. Gonnella, F. Pichi, and G. Rozza. Nonlinear reduction strategies for data compression: A comprehensive comparison from diffusion to advection problems. arXiv:2501.12816, 2025, [2501.12816](#). doi:[10.48550/arXiv.2501.12816](#).
- [18] L. Tomada, M. Khamlich, F. Pichi, and G. Rozza. Sparse Identification for bifurcating phenomena in Computational Fluid Dynamics. arXiv:2502.11194, 2025, [2502.11194](#). doi:[10.48550/arXiv.2502.11194](#).
- [17] F. Pichi and M. Strazzullo. Deflation-based certified greedy algorithm and adaptivity for bifurcating nonlinear PDEs. arXiv:2501.12361, 2025, [2501.12361](#). doi:[10.48550/arXiv.2501.12361](#).
- [16] F. Pichi and G. Rozza. Reduced basis approaches for parametrized bifurcation problems held by non-linear Von Karman equations. *Journal of Scientific Computing*, 81(1):112–135, 2019. doi:[10.1007/s10915-019-01003-3](#).
- [15] F. Pichi, A. Quaini, and G. Rozza. A reduced order modeling technique to study bifurcating phenomena: Application to the Gross-Pitaevskii equation. *SIAM Journal on Scientific Computing*, 42(5):B1115–B1135, 2020. doi:[10.1137/20M1313106](#).
- [14] M. Pintore, F. Pichi, M. Hess, G. Rozza, and C. Canuto. Efficient computation of bifurcation diagrams with a deflated approach to reduced basis spectral element method. *Advances in Computational Mathematics*, 47(1), 2020. doi:[10.1007/s10444-020-09827-6](#).
- [13] F. Pichi, M. Strazzullo, F. Ballarin, and G. Rozza. Driving bifurcating parametrized nonlinear PDEs by optimal control strategies: Application to Navier-Stokes equations with model order reduction. *ESAIM: Mathematical Modelling and Numerical Analysis*, 2022. doi:[10.1051/m2an/2022044](#).
- [12] F. Pichi. *Reduced order models for parametric bifurcation problems in nonlinear PDEs*. PhD thesis, Scuola Internazionale Superiore di Studi Avanzati, 2020.
- [11] M. Khamlich, F. Pichi, and G. Rozza. Model order reduction for bifurcating phenomena in Fluid-Structure Interaction problems. *International Journal for Numerical Methods in Fluids*, 2022. doi:[10.1002/fluid.5118](#).
- [10] F. Pichi, F. Ballarin, G. Rozza, and J. S. Hesthaven. An artificial neural network approach to bifurcating phenomena in computational fluid dynamics. *Computers & Fluids*, 254:105813, 2023. doi:[10.1016/j.compfluid.2023.105813](#).
- [9] F. Pichi, B. Moya, and J. S. Hesthaven. A graph convolutional autoencoder approach to model order reduction for parametrized PDEs. *Journal of Computational Physics*, 501:112762, 2024. doi:[10.1016/j.jcp.2024.112762](#).

- [8] G. Rozza, F. Ballarin, L. Scandurra, and F. Pichi. *Real Time Reduced Order Computational Mechanics: Parametric PDEs Worked Out Problems*, volume 5 of *SISSA Springer Series*. Springer Nature Switzerland, Cham, 2024. doi:[10.1007/978-3-031-49892-3](https://doi.org/10.1007/978-3-031-49892-3).
- [7] M. Khamlich, F. Pichi, and G. Rozza. Optimal Transport-Inspired Deep Learning Framework for Slow-Decaying Kolmogorov n-Width Problems: Exploiting Sinkhorn Loss and Wasserstein Kernel. *SIAM Journal on Scientific Computing*, pages C235–C264, 2025. doi:[10.1137/23M1604680](https://doi.org/10.1137/23M1604680).
- [6] O. M. Morrison, F. Pichi, and J. S. Hesthaven. GFN: A graph feedforward network for resolution-invariant reduced operator learning in multifidelity applications. *Computer Methods in Applied Mechanics and Engineering*, 432:117458, 2024. doi:[10.1016/j.cma.2024.117458](https://doi.org/10.1016/j.cma.2024.117458).
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- [4] F. Pichi, M. Strazzullo, F. Ballarin, and G. Rozza. Chapter 2: Finite Element-Based Reduced Basis Method in Computational Fluid Dynamics. In *Advanced Reduced Order Methods and Applications in Computational Fluid Dynamics*, Computational Science & Engineering, pages 13–58. Society for Industrial and Applied Mathematics, 2022. doi:[10.1137/1.9781611977257.ch2](https://doi.org/10.1137/1.9781611977257.ch2).
- [3] F. Pichi, F. Ballarin, and G. Rozza. Chapter 5: Reduced Basis Approaches to Bifurcating Nonlinear Parametrized Partial Differential Equations. In *Advanced Reduced Order Methods and Applications in Computational Fluid Dynamics*, Computational Science & Engineering, pages 97–123. Society for Industrial and Applied Mathematics, 2022. doi:[10.1137/1.9781611977257.ch5](https://doi.org/10.1137/1.9781611977257.ch5).
- [2] M. Khamlich, F. Pichi, and G. Rozza. Chapter 15: Reduced Order Models for Bifurcating Phenomena in Fluid-Structure Interaction Problems. In *Advanced Reduced Order Methods and Applications in Computational Fluid Dynamics*, Computational Science & Engineering, pages 311–324. Society for Industrial and Applied Mathematics, 2022. doi:[10.1137/1.9781611977257.ch15](https://doi.org/10.1137/1.9781611977257.ch15).
- [1] F. Pichi and G. Rozza. Reduced Order Models for the Buckling of Hyperelastic Beams. In G. Rozza, G. Stabile, M. Gunzburger, and M. D’Elia, editors, *Reduction, Approximation, Machine Learning, Surrogates, Emulators and Simulators: RAMSES*, pages 199–240. Springer Nature Switzerland, Cham, 2024. doi:[10.1007/978-3-031-55060-7.9](https://doi.org/10.1007/978-3-031-55060-7.9).