

Journal Articles

1. Baraldi, R. J. & Manns, P. Domain decomposition for integer optimal control with total variation regularization. *SIAM Journal on Control and Optimization*, to appear. eprint: [arxiv:2410.15672](https://arxiv.org/abs/2410.15672) (2025).
2. Baraldi, R., Kouri, D. P. & Antil, H. Memory-Efficient Nonsmooth Dynamic Optimization using Adaptive Randomized Compression. *In Review at Optimization and Engineering* (2025).
3. Baraldi, R. J. & Kouri, D. P. Efficient Subproblem Solvers for a nonsmooth trust-region method. *Computational Optimization and Applications* **90**, 193–226 (2025).
4. Baraldi, R. J. & Kouri, D. P. Local Convergence Analysis of an inexact trust-region method for nonsmooth optimization. *Optimization Letters* **18**, 663–680 (2024).
5. Javeed, A., Baraldi, R. J., Kouri, D. P. & Scheinberg, K. ProxSTORM - An Stochastic Trust Region Algorithm for Nonsmooth Optimization. *In Review in Computational Optimization and Applications* (2025).
6. Baraldi, R. J., Wild, S. & Leyffer, S. Using Filter Methods to Guide Convergence for ADMM with Applications to Nonnegative Matrix Factorization. *In Review at the Journal of Optimization Theory and Applications* (2023).
7. Baraldi, R. J., Aravkin, A. & Dominique, O. A Levenberg - Marquardt Method for Nonsmooth Regularized Least Squares. *SIAM Journal on Scientific Computing* **46**, A2557–A2581 (2022).
8. Baraldi, R. J. & Kouri, D. P. A Proximal Trust-Region Method for Nonsmooth Optimization with Inexact Function and Gradient Evaluations. *Mathematical Programming* **1**, 559–598 (2023).
9. Rim, D., Baraldi, R. J., Liu, C., LeVeque, R. & Terada, K. Tsunami Early Warning from Global Navigation Satellite System Data using Convolutional Neural Networks. *Geophysical Review Letters* **49**. <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2022GL099511> (2022).
10. Baraldi, R. J., Aravkin, A. & Orban, D. A Proximal Quasi-Newton Trust-Region Method for Nonsmooth Regularized Optimization. *SIAM Journal of Optimization* **32**, 900–929. <https://pubs.siam.org/doi/abs/10.1137/21M1409536> (2021).
11. Liu, C., Rim, D., Baraldi, R. J. & LeVeque, R. Comparison of Machine Learning Approaches for Tsunami Forecasting from Sparse Observations. *Pure and Applied Geophysics* **178**, 5129–5153. <https://link.springer.com/article/10.1007/s00024-021-02841-9> (2021).
12. Baraldi, R. J., Kumar, R. & Aravkin, A. Basis Pursuit Denoise with Nonsmooth Constraints. *IEEE Transactions on Signal Processing* **67**, 5811–5823 (2019).

13. Baraldi, R. J., Ulberg, C., Kumar, R., Creager, K. & Aravkin, A. Relaxation algorithms for matrix completion, with applications to seismic travel-time data interpolation. *Inverse Problems* **35**, 105009. <https://doi.org/10.1088/0266-5611-35-10-105009> (Sept. 2019).
14. Banks, H. T., Baraldi, R. J., Catenacci, J. & Myers, N. Parameter Estimation Using Unidentified Individual Data in Individual Based Models. *Mathematical Modeling of Natural Phenomena* **11**, 103–121 (2016).
15. Banks, H. T., Baraldi, R. J., Flores, K. & Stemkovski, M. Validation of a Mathematical Model for Green Algae (*Raphidocelis subcapitata*) Growth and Implications for a Coupled Dynamical System with *Daphnia Magna*. *Applied Sciences* **6**, 155 (2016).
16. Adoteye, K., Banks, H. T., Baraldi, R. J., Nardini, J. & Thompson, W. C. Correlation of Parameter Estimators for Models Admitting Multiple Parametrizations. *International Journal of Pure and Applied Mathematics* **105**, 497–522 (2015).
17. Banks, H. T., Baraldi, R. J. & Flores, K. Optimal Design for Minimizing Uncertainty in Dynamic Equilibrium Systems. *Eurasian Journal of Mathematical and Computer Applications* **3**, 20–43 (2015).
18. Banks, H. T. *et al.* Uncertainty quantification in modeling HIV viral mechanics. *Mathematical Biosciences and Engineering* **12**, 937–964 (2015).

Book Chapters

19. Baraldi, R. J., Kouri, D. P. & Ridzal, D. in *Encyclopedia of Optimization* (eds Pardalos, P. M. & Prokopyev, O. A.) (Springer Nature, Cham, Switzerland, 2023).

Conference Papers

20. Baraldi, R. J., Herberg, E., Kouri, D. P. & Antil, H. *Adaptive Randomized Sketching for Dynamic Nonsmooth Optimization in Model Validation and Uncertainty Quantification, Volume 3* (eds Platz, R., Flynn, G., Neal, K. & Ouellette, S.) (Springer Nature Switzerland, Cham, 2024), 107–116. ISBN: 978-3-031-37003-8.
21. *Uncertainty quantification for a model of HIV-1 patient response to antiretroviral therapy interruptions* in *Proceedings of the 2014 American Control Conference* (2014), 2753–2758.

Technical Reports

22. Baraldi, R. J., Nardini, J., Thorpe, E. & Banks, H. T. *The Effects of Parameterization on Inverse Problems* Report CRSC-TR14-07 (NC State Center for Research in Scientific Computation, Raleigh, NC, 2014).
23. Baraldi, R. J., Kouri, D. P. & Heiden, M. *Rapid Optimization of Total Variation with Applications in Imaging, Additive Manufacturing, and Qualification* Report (Sandia National Laboratories, Albuquerque, NM, 2024).