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## List of Publications

Name: Babak Maboudi Afkham

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### Peer-Reviewed Scientific Articles

#### Under Peer-Revision

1. Andreas Horst, Babak Maboudi Afkham, Yiqiu Dong, Jakob Lemvig. "Uncertainty Quantification for Linear Inverse Problem with Besov prior: A Randomize-Then-Optimize approach". Submitted to Journal on Computational Statistics.
2. Babak Maboudi Afkham, Ana Carpio. "Simultaneous Estimation Of Seafloor and Its Roughness With Acoustic Waves". Submitted to SIAM Journal on Scientific Computing.

#### Published

3. Babak Maboudi Afkham, Nicolai Andre Brogaard Riis, Yiqiu Dong, Per Christian Hansen. "Inferring Object Boundaries and their Roughness with Uncertainty Quantification", 29 January 2024, preprint available at Research Square [<https://doi.org/10.21203/rs.3.rs-3894410/v1>]
4. Babak Maboudi Afkham, Julianne Chung, and Matthias Chung. "Goal-oriented Uncertainty Quantification for Inverse Problems via Variational Encoder-Decoder Networks", 2023, preprint available at arXiv [<https://arxiv.org/pdf/2304.08324.pdf>].
5. Babak Maboudi Afkham, Kim Knudsen, Aksel Kaastrup Rasmussen, and Tanja Tarvainen. "A Bayesian Approach For Consistent Reconstruction of Inclusions." *Inverse Problems* 40, no. 4 (2024): 045004. available at [<https://iopscience.iop.org/article/10.1088/1361-6420/ad2531/meta>]
6. Babak Maboudi Afkham, Yiqiu Dong, and Per Christian Hansen. "Uncertainty Quantification of Inclusion Boundaries in the Context of X-Ray Tomography." *SIAM/ASA Journal on Uncertainty Quantification* 11.1 (2023): 31-61. available at [<https://epubs.siam.org/doi/abs/10.1137/21M1433782>]
7. Kenneth Scheel, Babak Maboudi Afkham, Kim Knudsen, "Computational Uncertainty Quantification for Parametrized Magnetic Resonance Electrical Impedance Tomography", *Proceedings of the 23rd International Conference on Biomedical Applications of Electrical Impedance Tomography*, (2023): 57. available at [<https://zenodo.org/records/8037618>]
8. Amal Alghami, Nicolai Andre Brogaard Riis, Babak Maboudi Afkham, Felipe Uribe, Silja L. Christensen, Per Christian Hansen, and Jakob Sauer Jørgensen. "CUQIpy-Part II: Computational Uncertainty Quantification for PDE-Based Inverse Problems in Python." *Inverse Problems* 40 (2024): 045010. available at [<https://iopscience.iop.org/article/10.1088/1361-6420/ad22e8/meta>]
9. Nicolai Andre Brogaard Riis, Amal Alghamdi, Felipe Uribe, Silja L. Christensen, Babak Maboudi Afkham, Per Christian Hansen, Jakob Sauer Jørgensen. "CUQIpy-Part I: Computational Uncertainty Quantification for Inverse Problems in Python." *Inverse Problems* 40 (2024): 045009. available at [<https://iopscience.iop.org/article/10.1088/1361-6420/ad22e7/meta>]
10. Babak Maboudi Afkham, Julianne Chung, and Matthias Chung. "Learning Regularization Parameters of Inverse Problems via Deep Neural Networks" *Inverse Problems* 37.10 (2021): 105017. available at [<https://iopscience.iop.org/article/10.1088/1361-6420/ac245d/meta>]

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11. Babak Maboudi Afkham, Nicolò Ripamonti, Qian Wang, and Jan S. Hesthaven. "Conservative Model Order Reduction for Fluid Flow" *Quantification of Uncertainty: Improving Efficiency and Technology: QUIET selected contributions* (2020): 67-99. available at [[https://link.springer.com/chapter/10.1007/978-3-030-48721-8\\_4](https://link.springer.com/chapter/10.1007/978-3-030-48721-8_4)]
12. Babak Maboudi Afkham, Jan S. Hesthaven. "Structure-Preserving Model-Reduction of Dissipative Hamiltonian systems". *Journal of Scientific Computing*, 81 (2019), 3-21. available at [<https://link.springer.com/article/10.1007/s10915-018-0653-6>]
13. Babak Maboudi Afkham, and Jan S. Hesthaven. "Structure Preserving Model Reduction of Parametric Hamiltonian Systems." *SIAM Journal on Scientific Computing* 39.6 (2017): A2616-A2644. available at [<https://epubs.siam.org/doi/abs/10.1137/17M1111991>]

## Non-refereed scientific articles

### In Preparation For Submission (To be submitted in Spring 2024)

14. Babak Maboudi Afkham, Amal Alghami, Jakob Sauer Jørgensen, Tanja Tarvainen. "Uncertainty Quantification for Linear Inverse Problem with Besov prior: A Randomize-Then-Optimize approach". To be submitted to *Journal on Computational Statistics*.
15. Babak Maboudi Afkham, Ashish Bhatt, Bernard Haasdonk, and Jan S. Hesthaven. "Symplectic model-reduction with a weighted inner product". To be submitted to *Journal on Scientific Computing*. preprint available at arXiv [<https://arxiv.org/abs/1803.07799>]

## Publications Intended for Professional Communities

16. Nicolai Andre Brogaard Riis, Amal Alghamdi, Felipe Uribe, Silja L. Christensen, Babak Maboudi Afkham, Per Christian Hansen, Jakob Sauer Jørgensen, "CUQIpy: Python Package for Computational Uncertainty Quantification for Inverse Problems". available at [<https://github.com/CUQI-DTU/CUQIpy?tab=readme-ov-file>]

## Theses

17. Ph.D. Thesis in Computational Mathematics and Simulation Science. "Geometric Model Order Reduction", EPFL (2018). available at [<https://infoscience.epfl.ch/record/257312?ln=en>]
18. Master's Thesis in Scientific Computing. "Modeling and Simulation of Elastic Rods with Intrinsic Curvature and Twist Immersed in Fluid", KTH (2014). available at [<https://kth.diva-portal.org/smash/get/diva2:735918/FULLTEXT01.pdf>]