

References Cited

- [1] Adams BM, Bohnhoff WJ, Dalbey KR, Ebeida MS, Eddy JP, Eldred MS, Hooper RW, Hough PD, Hu KT, Jakeman JD, Khalil M, Maupin KA, Monschke JA, Ridgway EM, Rushdi AA, Seidl DT, Stephens JA, Swiler LP, Tran A, Winokur JG (2022) Dakota, A Multilevel Parallel Object-Oriented Framework for Design Optimization, Parameter Estimation, Uncertainty Quantification, and Sensitivity Analysis: Version 6.16 User's Manual. Sandia National Laboratories
- [2] Ala G, Fasshauer GE, Francomano E, McCourt M, Ganci S (2017) An augmented MFS approach for brain activity reconstruction. *Math Comput Simul* 141:3–15, DOI 10.1016/j.matcom.2016.11.009
- [3] Bachem O, Lucic M, Krause A (2017) Practical coresets constructions for machine learning. arXiv preprint arXiv:170306476
- [4] Ben Abdellah A, L'Ecuyer P, Owen AB, Puchhammer F (2021) Density estimation by randomized quasi-Monte Carlo. *SIAM/ASA J Uncertain Quantif* 9(280-301), DOI 10.1137/19M1259213
- [5] Bingham D (2017) The virtual library of simulation experiments: Test functions and data sets. URL <https://www.sfu.ca/~ssurjano/index.html>
- [6] Bottou L (2010) Large-scale machine learning with stochastic gradient descent. In: *Proceedings of COMPSTAT'2010*, Springer, pp 177–186
- [7] Cao S, Park C, Barbieri RA, Bass SA, Bazow D, Bernhard J, Coleman J, Fries R, Gale C, He Y, Heinz U, Jacak BV, Jacobs PM, Jeon S, Kordell M, Kumar A, Luo T, Majumder A, Nejahi Y, Pablos D, Pang LG, Putschke JH, Roland G, Rose S, Schenke B, Schwiebert L, Shen C, Sirimanna C, Soltz RA, Velicanu D, Vujanovic G, Wang XN, Wolpert RL (2017) Multistage Monte Carlo simulation of jet modification in a static medium. *Phys Rev C* 96:024,909, DOI 10.1103/PhysRevC.96.024909, URL <https://link.aps.org/doi/10.1103/PhysRevC.96.024909>
- [8] Cao S, Chen Y, Coleman J, Mulligan J, Jacobs PM, Soltz RA, Angerami A, Arora R, Bass SA, Cunqueiro L, Dai T, Du L, Ehlers R, Elfner H, Everett D, Fan W, Fries RJ, Gale C, Garza F, He Y, Heffernan M, Heinz U, Jacak BV, Jeon S, Ke W, Kim B, Kordell M, Kumar A, Majumder A, Mak S, McNelis M, Natrass C, Oliinychenko D, Park C, Paquet JF, Putschke JH, Roland G, Silva A, Schenke B, Schwiebert L, Shen C, Sirimanna C, Tachibana Y, Vujanovic G, Wang XN, Wolpert RL, Xu Y (2021) Determining the jet transport coefficient \hat{q} from inclusive hadron suppression measurements using Bayesian parameter estimation. *Phys Rev C* 104:024,905, DOI 10.1103/PhysRevC.104.024905, URL <https://link.aps.org/doi/10.1103/PhysRevC.104.024905>
- [9] Chan TM (2006) Faster core-set constructions and data-stream algorithms in fixed dimensions. *Comput Geom* 35(1-2):20–35
- [10] Chang YH, Zhang L, Wang X, Yeh ST, Mak S, Sung CL, Wu CFJ, Yang V (2019) Kernel-smoothed proper orthogonal decomposition-based emulation for spatiotemporally evolving flow dynamics prediction. *AIAA Journal* 57(12):5269–5280
- [11] Chang YH, Wang X, Zhang L, Li Y, Mak S, Wu CFJ, Yang V (2021) Reduced-order modeling for complex flow emulation by common kernel-smoothed proper orthogonal decomposition. *AIAA Journal* 59(9):3291–3303
- [12] Chen J, Du R, Li P, Lyu L (2019) Quasi-Monte Carlo sampling for machine-learning partial differential equations. arXiv preprint arXiv:191101612
- [13] Chen J, Mak S, Joseph VR, Zhang C (2020) Function-on-function kriging, with applications to three-dimensional printing of aortic tissues. *Technometrics* 63:384–395
- [14] Chen J, Mak S, Joseph VR, Zhang C (2022) Adaptive design for gaussian process regression under censoring. *The Annals of Applied Statistics* 16(2):744–764

- [15] Chen WY, Mackey L, Gorham J, Briol FX, Oates CJ (2018) Stein points. arXiv preprint arXiv:180310161
- [16] Chen Y, Welling M, Smola A (2012) Super-samples from kernel herding. arXiv preprint arXiv:12033472
- [17] Chen Z, Mak S, Wu CFJ (2019) A hierarchical expected improvement method for Bayesian optimization. arXiv preprint arXiv:191107285
- [18] Choi SCT, Ding Y, Hickernell FJ, Tong X (2017) Local adaption for approximation and minimization of univariate functions. *J Complexity* 40:17–33, DOI 10.1016/j.jco.2016.11.005
- [19] Choi SCT, Hickernell FJ, McCourt MJ, Sorokin A (2020) QMCPy blogs. URL <https://qmcpy.wpcomstaging.com>
- [20] Choi SCT, Hickernell FJ, Jagadeeswaran R, McCourt MJ, Sorokin A (2020) QMCPy documentation. URL <https://qmcpy.readthedocs.io/en/latest/>
- [21] Choi SCT, Ding Y, Hickernell FJ, Jiang L, Jiménez Rugama LIA, Li D, Jagadeeswaran R, Tong X, Zhang K, Zhang Y, Zhou X (2021) GAIL: Guaranteed Automatic Integration Library (versions 1.0–2.3.2). MATLAB software, http://gailgithub.github.io/GAIL_Dev/, DOI 10.5281/zenodo.4018189
- [22] Choi SCT, Hickernell FJ, Jagadeeswaran R, McCourt M, Sorokin A (2022) QMCPy: A quasi-Monte Carlo Python library. DOI 10.5281/zenodo.3964489, URL <https://qmcsoftware.github.io/QMCSoftware/>
- [23] Choi SCT, Hickernell FJ, Jagadeeswaran R, McCourt MJ, Sorokin AG (2022) Quasi-Monte Carlo software. In: Keller A (ed) *Monte Carlo and Quasi-Monte Carlo Methods: MCQMC*, Oxford, England, August 2020, Springer, Cham, Springer Proceedings in Mathematics and Statistics, pp 23–50, <https://arxiv.org/abs/2102.07833>
- [24] Clancy N, Ding Y, Hamilton C, Hickernell FJ, Zhang Y (2014) The cost of deterministic, adaptive, automatic algorithms: Cones, not balls. *J Complexity* 30:21–45, DOI 10.1016/j.jco.2013.09.002
- [25] Cools R, Nuyens D (eds) (2016) *Monte Carlo and Quasi-Monte Carlo Methods: MCQMC*, Leuven, Belgium, April 2014, Springer Proceedings in Mathematics and Statistics, vol 163, Springer-Verlag, Berlin
- [26] Courtoy A, Huston J, Nadolsky P, Xie K, Yan M, Yuan CP (2022) Parton distributions need representative sampling. preprint, URL <https://arxiv.org/pdf/2205.10444.pdf>
- [27] Darmon Y, Godin M, L’Ecuyer P, Jemel A, Marion P, Munger D (2018) LatNet builder. URL <https://github.com/umontreal-simul/latnetbuilder>
- [28] Davis A, Parno M, Reinartz A, Seelinger L (2022) UQ and model bridge (UM-bridge). URL <https://um-bridge-benchmarks.readthedocs.io/en/docs/>
- [29] Debusschere B (2022) UQ toolkit. URL <https://www.sandia.gov/uqtoolkit/>
- [30] Debusschere B, Najm HN, Pébay PP, Knio OM, Ghanem RG, Maître OPL (2004) Numerical challenges in the use of polynomial chaos representations for stochastic processes. *SIAM J Sci Comput* pp 698–719, URL 10.1137/S1064827503427741
- [31] Dick J, Pillichshammer F (2010) *Digital Nets and Sequences: Discrepancy Theory and Quasi-Monte Carlo Integration*. Cambridge University Press, Cambridge
- [32] Dick J, Kuo FY, Sloan IH (2013) High-dimensional integration: the quasi-Monte Carlo way. *Acta Numerica* 22:133–288
- [33] Dick J, Kritzer P, Pillichshammer F (2022) *Lattice Rules: Numerical Integration, Approximation, and Discrepancy*. Springer Series in Computational Mathematics, Springer Cham, DOI <https://doi.org/10.1007/978-3-031-09951-9>
- [34] Ding Y (2015) *Guaranteed adaptive univariate function approximation*. PhD thesis, Illinois Institute of Technology
- [35] Ding Y, Hickernell FJ, Jiménez Rugama LIA (2020) An adaptive algorithm employing continuous linear functionals. In: [85], pp 161–181, DOI 10.1007/978-3-030-43465-6_8

- [36] Ding Y, Hickernell FJ, Kritzer P, Mak S (2020) Adaptive approximation for multivariate linear problems with inputs lying in a cone. In: Hickernell FJ, Kritzer P (eds) *Multivariate Algorithms and Information-Based Complexity*, DeGruyter, Berlin/Boston, pp 109–145, DOI 10.1515/9783110635461-007
- [37] Ehlers R, Angerami A, Arora R, Bass S, Cao S, Chen Y, Du L, Dai T, Elfner H, Fan W, et al (2022) Bayesian analysis of qgp jet transport using multi-scale modeling applied to inclusive hadron and reconstructed jet data. arXiv preprint arXiv:220807950
- [38] Everett D, Ke W, Paquet JF, Vujanovic G, Bass SA, Du L, Gale C, Heffernan M, Heinz U, Liyanage D, Luzum M, Majumder A, McNelis M, Shen C, Xu Y, Angerami A, Cao S, Chen Y, Coleman J, Cunqueiro L, Dai T, Ehlers R, Elfner H, Fan W, Fries RJ, Garza F, He Y, Jacak BV, Jacobs PM, Jeon S, Kim B, Kordell M, Kumar A, Mak S, Mulligan J, Nattrass C, Oliinychenko D, Park C, Putschke JH, Roland G, Schenke B, Schwiebert L, Silva A, Sirimanna C, Soltz RA, Tachibana Y, Wang XN, Wolpert RL (2021) Multisystem Bayesian constraints on the transport coefficients of QCD matter. *Phys Rev C* 103:054,904, DOI 10.1103/PhysRevC.103.054904, URL <https://link.aps.org/doi/10.1103/PhysRevC.103.054904>
- [39] Everett D, Ke W, Paquet JF, Vujanovic G, Bass SA, Du L, Gale C, Heffernan M, Heinz U, Liyanage D, Luzum M, Majumder A, McNelis M, Shen C, Xu Y, Angerami A, Cao S, Chen Y, Coleman J, Cunqueiro L, Dai T, Ehlers R, Elfner H, Fan W, Fries RJ, Garza F, He Y, Jacak BV, Jacobs PM, Jeon S, Kim B, Kordell M, Kumar A, Mak S, Mulligan J, Nattrass C, Oliinychenko D, Park C, Putschke JH, Roland G, Schenke B, Schwiebert L, Silva A, Sirimanna C, Soltz RA, Tachibana Y, Wang XN, Wolpert RL (2021) Phenomenological constraints on the transport properties of QCD matter with data-driven model averaging. *Phys Rev Lett* 126:242,301, DOI 10.1103/PhysRevLett.126.242301, URL <https://link.aps.org/doi/10.1103/PhysRevLett.126.242301>
- [40] Everett D, Oliinychenko D, Luzum M, Paquet JF, Vujanovic G, Bass S, Du L, Gale C, Heffernan M, Heinz U, et al (2022) Role of bulk viscosity in deuteron production in ultrarelativistic nuclear collisions. *Physical Review C* 106(6):064,901
- [41] Fan W, Vujanovic G, Bass S, Majumder A, Angerami A, Arora R, Cao S, Chen Y, Dai T, Du L, et al (2022) Multi-scale evolution of charmed particles in a nuclear medium. arXiv preprint arXiv:220800983
- [42] Friedman JH (2002) Stochastic gradient boosting. *Comput Statist & Data Anal* 38(4):367–378
- [43] Gelman A, Carlin JB, Stern HS, Rubin DB (1995) *Bayesian Data Analysis*. Chapman and Hall/CRC
- [44] Gelman A, Carlin JB, Stern HS, Dunson DB, Vehtari A, Rubin DB (2013) *Bayesian Data Analysis*. CRC Texts in Statistical Science, Chapman & Hall
- [45] Giles M (2015) Multilevel Monte Carlo methods. *Acta Numer* 24:259–328, DOI 10.1017/S096249291500001X
- [46] Giles MB (2008) Multilevel Monte Carlo path simulation. *Operations Research* 56(3):607–617
- [47] Giles MB (2015) Multilevel monte carlo methods. *Acta Numerica* 24:259–328
- [48] Gilquin L, Jiménez Rugama LIA, Arnaud E, Hickernell FJ, Monod H, Prieur C (2017) Iterative construction of replicated designs based on Sobol’ sequences. *C R Math Acad Sci Paris* 355:10–14, DOI 10.1016/j.crma.2016.11.013
- [49] Hahn T (2005) CUBA—a library for multidimensional numerical integration. *Comput Phys Commun* 168:78–95, DOI 10.1016/j.cpc.2005.01.010, URL <https://feynarts.de/cuba/>
- [50] Haji-Latif AL, Nobile F, Tempone R (2016) Multi-index Monte Carlo: when sparsity meets sampling. *Numer Math* 132:767–806, DOI 10.1007/s00211-015-0734-5
- [51] Heinrich S (2001) Multilevel Monte Carlo methods. In: Margenov S, Wasniewski J, Yalamov PY (eds) *Large-Scale Scientific Computing, Third International Conference, LSSC 2001*, Springer-Verlag, Lecture Notes in Computer Science, vol 2179, pp 58–67

- [52] Herrmann L, Schwab C (2020) Multilevel quasi-Monte Carlo uncertainty quantification for advection-diffusion-reaction. In: [85], pp 31–67, DOI 10.1007/978-3-030-43465-6_2
- [53] Hickernell FJ (2020) Quasi-Monte Carlo software. URL <https://mcqmc20.web.ox.ac.uk/programme>
- [54] Hickernell FJ, Sorokin A (2020) Quasi-Monte Carlo software tutorial. URL https://media.ed.ac.uk/playlist/dedicated/51612401/1_0z0wec2z/1_2k12mwiw
- [55] Hickernell FJ (1998) A generalized discrepancy and quadrature error bound. *Math Comp* 67:299–322, DOI 10.1090/S0025-5718-98-00894-1
- [56] Hickernell FJ (1999) Goodness-of-fit statistics, discrepancies and robust designs. *Statist Probab Lett* 44:73–78, DOI 10.1016/S0167-7152(98)00293-4
- [57] Hickernell FJ (2018) The trio identity for quasi-Monte Carlo error analysis. In: Glynn P, Owen A (eds) *Monte Carlo and Quasi-Monte Carlo Methods: MCQMC*, Stanford, USA, August 2016, Springer-Verlag, Berlin, Springer Proceedings in Mathematics and Statistics, pp 3–27, DOI 10.1007/978-3-319-91436-7
- [58] Hickernell FJ, Jagadeeswaran R (2019) Comment on “Probabilistic integration: A role in statistical computation?”. *Statist Sci* 34:23–28, DOI 10.1214/18-STS660
- [59] Hickernell FJ, Jiménez Rugama LIA (2016) Reliable adaptive cubature using digital sequences. In: [25], pp 367–383, arXiv:1410.8615 [math.NA]
- [60] Hickernell FJ, Choi SCT, Jiang L, Jiménez Rugama LIA (2018) Monte Carlo simulation, automatic stopping criteria for. In: Davidian M, Everitt B, Kenett RS, Molenberghs G, Piegorsch W, Ruggeri F (eds) *Wiley StatsRef-Statistics Reference Online*, John Wiley & Sons Ltd., DOI 10.1002/9781118445112.stat08035
- [61] Hickernell FJ, Jiménez Rugama LIA, Li D (2018) Adaptive quasi-Monte Carlo methods for cubature. In: Dick J, Kuo FY, Woźniakowski H (eds) *Contemporary Computational Mathematics — a celebration of the 80th birthday of Ian Sloan*, Springer-Verlag, pp 597–619, DOI 10.1007/978-3-319-72456-0
- [62] Hickernell FJ, Kritzer P, Woźniakowski H (2020) Exponential tractability of linear tensor product problems. In: *2018 MATRIX Annals*, MATRIX Book Series, Springer Nature Switzerland AG, pp 61–78
- [63] Hjort NL, Holmes C, Müller P, Walker SG (2010) *Bayesian Nonparametrics*, vol 28. Cambridge University Press
- [64] Hoffman MD, Gelman A, et al (2014) The no-u-turn sampler: adaptively setting path lengths in hamiltonian monte carlo. *J Mach Learn Res* 15(1):1593–1623
- [65] Huang C, Joseph VR, Mak S (2022) Population quasi-monte carlo. *Journal of Computational and Graphical Statistics* pp 1–14
- [66] Huggins J, Campbell T, Broderick T (2016) Coresets for scalable Bayesian logistic regression. In: *Advances in Neural Information Processing Systems*, pp 4080–4088
- [67] Jagadeeswaran R, Hickernell FJ (2019) Fast automatic Bayesian cubature using lattice sampling. *Stat Comput* 29:1215–1229, DOI 10.1007/s11222-019-09895-9
- [68] Jagadeeswaran R, Hickernell FJ (2022) Fast automatic Bayesian cubature using Sobol’ sampling. In: Botev Z, Keller A, Lemieux C, Tuffin B (eds) *Advances in Modeling and Simulation: Festschrift in Honour of Pierre L’Ecuyer*, Springer, Cham, pp 301–318, DOI 10.1007/978-3-031-10193-9_15
- [69] Ji Y, Mak S, Soeder D, Paquet J (2021) A graphical Gaussian process model for multi-fidelity emulation of expensive computer codes. arXiv preprint arXiv:210800306
- [70] Ji Y, Yuchi HS, Soeder D, Paquet JF, Bass SA, Joseph VR, Wu C, Mak S (2022) Multi-stage multi-fidelity gaussian process modeling, with application to heavy-ion collisions. arXiv preprint arXiv:220913748
- [71] Jiménez Rugama LIA, Gilquin L (2018) Reliable error estimation for Sobol’ indices. *Statistics and Computing* 28:725–738, DOI 10.1007/s11222-017-9759-1

- [72] Jiménez Rugama LIA, Hickernell FJ (2016) Adaptive multidimensional integration based on rank-1 lattices. In: [25], pp 407–422, arXiv:1411.1966
- [73] Jin C, Netrapalli P, Jordan MI (2018) Accelerated gradient descent escapes saddle points faster than gradient descent. In: Conference On Learning Theory, PMLR, pp 1042–1085
- [74] Johnson T, Fasshauer GE, Hickernell FJ (2018+) Characterizing reproducing kernel Hilbert spaces. In preparation
- [75] Jones DR, Schonlau M, Welch WJ (1998) Efficient global optimization of expensive black-box functions. *Journal of Global Optimization* 13(4):455–492
- [76] Joseph VR, Mak S (2021) Supervised compression of big data. *Statistical Analysis and Data Mining: The ASA Data Science Journal* 14(3):217–229
- [77] Joseph VR, Dasgupta T, Tuo R, Wu CJ (2015) Sequential exploration of complex surfaces using minimum energy designs. *Technometrics* 57(1):64–74
- [78] Kauder K (2019) JETSCAPE v1.0 quickstart guide. *Nuclear Phys A* 982:615–618
- [79] Kaufman CG, Bingham D, Habib S, Heitmann K, Frieman JA (2011) Efficient emulators of computer experiments using compactly supported correlation functions, with an application to cosmology. *The Annals of Applied Statistics* 5(4):2470–2492
- [80] Keller A (2013) Quasi-Monte Carlo image synthesis in a nutshell. In: Dick J, Kuo FY, Peters GW, Sloan IH (eds) *Monte Carlo and Quasi-Monte Carlo Methods 2012*, Springer-Verlag, Berlin, Springer Proceedings in Mathematics and Statistics, vol 65, pp 213–249, DOI 10.1007/978-3-642-41095-6
- [81] Krishna A, Mak S, Joseph R (2019) Distributional clustering: A distribution-preserving clustering method. arXiv preprint arXiv:191105940
- [82] Kucherenko S (2022) BRODA. URL <https://www.broda.co.uk/index.html>
- [83] Kumar A, Tachibana Y, Pablos D, Sirimanna C, Fries R, Angerami A, Bass S, Cao S, Coleman J, Cunqueiro L (2019) The JETSCAPE framework: p+p results. arXiv preprint arXiv:191005481
- [84] Kumar A, Tachibana Y, Sirimanna C, Vujanovic G, Cao S, Majumder A, Chen Y, Du L, Ehlers R, Everett D, et al (2022) Inclusive jet and hadron suppression in a multi-stage approach. arXiv preprint arXiv:220401163
- [85] L’Ecuyer P, Tuffin B (eds) (2020) *Monte Carlo and Quasi-Monte Carlo Methods: MCQMC*, Rennes, France, July 2018, Springer Proceedings in Mathematics and Statistics, vol 324, Springer, Cham
- [86] Li D (2016) Reliable quasi-Monte Carlo with control variates. Master’s thesis, Illinois Institute of Technology
- [87] Li Y, Wang X, Mak S, Yeh ST, Lin LH, Wu CFJ, Yang V (2017) A two-stage transfer function identification methodology and its applications to bi-swirl injectors. In: 53rd AIAA/SAE/ASEE Joint Propulsion Conference, p 4933
- [88] Li Y, Wang X, Mak S, Sung CL, Wu J, Yang V (2018) Uncertainty quantification of flame transfer function under a Bayesian framework. In: 2018 AIAA Aerospace Sciences Meeting, p 1187
- [89] Link WA, Eaton MJ (2012) On thinning of chains in MCMC. *Methods in Ecology and Evolution* 3(1):112–115
- [90] Liu J (2018) Adaptive quadrature with a general error criterion. Master’s thesis, Illinois Institute of Technology
- [91] Liyanage D, Ji Y, Everett D, Heffernan M, Heinz U, Mak S, Paquet JF (2022) Efficient emulation of relativistic heavy ion collisions with transfer learning. *Physical Review C* 105(3):034,910
- [92] Lopes A (2020) Recreating Big Bang matter on Earth. <https://phys.org/news/2020-12-recreating-big-earth.html>, accessed: 2022-12-27

- [93] Ma P, Mahoney MW, Yu B (2015) A statistical perspective on algorithmic leveraging. *J Mach Learn Res* 16(1):861–911
- [94] Mahoney MW (2011) Randomized algorithms for matrices and data. *arXiv preprint arXiv:11045557*
- [95] Mak S, Joseph VR (2017) Projected support points, with application to optimal MCMC reduction. *arXiv preprint arXiv:170806897*
- [96] Mak S, Joseph VR (2018) Minimax and minimax projection designs using clustering. *J Comput and Graph Statist* 27(1):166–178
- [97] Mak S, Joseph VR (2018) Support points. *Ann Statist* 46(6A):2562–2592
- [98] Mak S, Wu CFJ (2019) Analysis-of-marginal-tail-means (ATM): A robust method for discrete black-box optimization. *Technometrics* 61(4):545–559
- [99] Mak S, Xie Y (2018) Maximum entropy low-rank matrix recovery. *IEEE J Sel Topics in Signal Process* 12(5):886–901
- [100] Mak S, Bingham D, Lu Y (2016) A regional compound Poisson process for hurricane and tropical storm damage. *J R Stat Soc Ser C Appl Stat* 65(5):677–703
- [101] Mak S, Sung CL, Wang X, Yeh ST, Chang YH, Joseph VR, Yang V, Wu CFJ (2018) An efficient surrogate model for emulation and physics extraction of large eddy simulations. *J Amer Statist Assoc* 113(524):1443–1456
- [102] Mak S, Yuchi HS, Xie Y (2021) Information-guided sampling for low-rank matrix completion. In: *ICML Workshop on Information Theoretic Methods for Rigorous, Responsible, and Reliable Machine Learning*
- [103] Mak S, Zhou Y, Hoang L, Wu C (2022) Tsec: a framework for online experimentation under experimental constraints. *Technometrics*, to appear
- [104] Marelli S, Sudret B (2014) UQLab: A framework for uncertainty quantification in MATLAB. In: *The 2nd International Conference on Vulnerability and Risk Analysis and Management (ICVRAM 2014)*, ASCE Library, pp 2554–2563, URL <https://www.uqlab.com>
- [105] Martin B, Elsherbeni A, Fasshauer GE, Hadi M (2018) Improved FDTD method around dielectric and pec interfaces using RBF-FD techniques. In: *2018 International Applied Computational Electromagnetics Society Symposium (ACES)*, DOI 10.23919/ROPACES.2018.8364209
- [106] McCourt M, Fasshauer GE (2017) Stable likelihood computation for Gaussian random fields. In: *Pesenson I, Le Gia Q, Mayeli A, Mhaskar H, Zhou DX (eds) Recent Applications of Harmonic Analysis to Function Spaces, Differential Equations, and Data Science: Novel Methods in Harmonic Analysis*, vol 2, Basel, Birkhäuser, pp 917–942
- [107] McCourt MJ, Fasshauer GE, Kozak D (2018) A nonstationary designer space-time kernel. In: *32nd Conference on Neural Information Processing Systems (NIPS 2018)*
- [108] Mishra PK, Nath SK, Sen MK, Fasshauer GE (2018) Hybrid Gaussian-cubic radial basis function for scattered data interpolation. *Comput Geosciences* 22:1203–1218, DOI 10.1007/s10596-018-9747-3
- [109] Mishra PK, Fasshauer GE, Sen MK, Ling L (2019) A stabilized radial basis-finite difference (RBF-FD) method with hybrid kernels. *Comput Math Appl* 77:2354–2368, DOI 10.1016/j.camwa.2018.12.027
- [110] Niederreiter H (1992) *Random Number Generation and Quasi-Monte Carlo Methods*. SIAM
- [111] Niederreiter H (1992) *Random Number Generation and Quasi-Monte Carlo Methods*. CBMS-NSF Regional Conference Series in Applied Mathematics, SIAM, Philadelphia
- [112] Nocedal J, Wright S (2006) *Numerical Optimization*. Springer Science & Business Media
- [113] Nuyens D (2017) Magic point shop. URL <https://people.cs.kuleuven.be/~dirk.nuyens/qmc-generators/>
- [114] OpenTURNS Developers (2020) An open source initiative for the Treatment of Uncertainties, Risks 'N Statistics. URL <http://www.openturns.org>

- [115] Owen A (2003) Data squashing by empirical likelihood. *Data Min Knowl Disc* 7(1):101–113
- [116] Owen AB (2020) On dropping the first Sobol’ point. arXiv preprint arXiv:200808051
- [117] Park C, Angerami A, Bass S, Cao S, Coleman J, Cunqueiro L, Dai T, Du L, Elfner H, Everett D (2019) Multi-stage jet evolution through QGP using the JETSCAPE framework: inclusive jets, correlations and leading hadrons. arXiv preprint arXiv:190205934
- [118] Parno M, Davis A, Seelinger L, Marzouk Y (2014) MIT uncertainty quantification (muq) library. URL https://mituq.bitbucket.io/source/_site/index.html
- [119] Paszke A, Gross S, Massa F, Lerer A, Bradbury J, Chanan G, Killeen T, Lin Z, Gimelshein N, Antiga L, Desmaison A, Köpf A, Yang E, DeVito Z, Raison M, Tejani A, Chilamkurthy S, Steiner B, Fang L, Bai J, Chintala S (2019) PyTorch: An imperative style, high-performance deep learning library. *Advances in neural information processing systems* 32:8026–8037
- [120] PyTorch Developers (2020) PyTorch discussion on Sobol’ sequence implementation. URL <https://github.com/pytorch/pytorch/issues/32047>
- [121] Quiroz M, Kohn R, Villani M, Tran MN (2018) Speeding up MCMC by efficient data sub-sampling. *Journal of the American Statistical Association* 114:831–843
- [122] Rashidinia J, Fasshauer GE, Khasi M (2016) A stable method for the evaluation of Gaussian radial basis function solutions of interpolation and collocation problems. *Comput Math Appl* 72(1):178–193, DOI 10.1016/j.camwa.2016.04.048
- [123] Rashidinia J, Khasi M, Fasshauer GE (2018) A stable Gaussian radial basis function method for solving nonlinear unsteady convection-diffusion-reaction equations. *Comput Math Appl* 75:1831–1850, DOI 10.1016/j.camwa.2017.12.007
- [124] Rosenthal JS (2017) Simple confidence intervals for MCMC without CLTs. *Electronic Journal of Statistics* 11(1):211–214
- [125] Saltelli A (2002) Making best use of model evaluations to compute sensitivity indices. *Comput Phys Commun* 145:280–297, DOI 10.1016/S0010-4655(02)00280-1
- [126] Saltelli A, Ratto M, Andres T, Campolongo F, Cariboni J, Gatelli D, Saisana M, Tarantola S (2008) *Global Sensitivity Analysis: The Primer*. John Wiley & Sons Ltd., Chichester, England
- [127] Santner TJ, Williams BJ, Notz WI, Williams BJ (2003) *The Design and Analysis of Computer Experiments*. Springer
- [128] SciPy Developers (2020) scipy discussion of Sobol’ sequence implementation. URL <https://github.com/scipy/scipy/pull/10844>
- [129] Sloan IH, Joe S (1994) *Lattice Methods for Multiple Integration*. Oxford University Press, Oxford
- [130] SmartUQ Developers (2020) SmartUQ. URL <https://www.smartuq.com/resources/uncertainty-quantification/>
- [131] Smith RC (2014) *Uncertainty Quantification: theory, implementation, and applications*. SIAM, Philadelphia
- [132] Sobol’ IM (2001) Global sensitivity indices for nonlinear mathematical models and their Monte Carlo estimates. *Math Comput Simul* 55(1-3):271–280
- [133] Soltz R (2018) Bayesian extraction of q with multi-stage jet evolution approach. In: *Proceedings, 9th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions: Hard Probes*, pp 1–5
- [134] Sorokin AG, Jagadeeswaran R (2022+) Monte carlo for vector functions of integrals. In: Hinrichs A, Kritzer P, Pillichshammer F (eds) *Monte Carlo and Quasi-Monte Carlo Methods: MCQMC, Linz, Austria, July 2022*, Springer, Cham, Springer Proceedings in Mathematics and Statistics, in preparation for submission for publication
- [135] Srivastava N, Hinton G, Krizhevsky A, Sutskever I, Salakhutdinov R (2014) Dropout: a simple way to prevent neural networks from overfitting. *J Mach Learn Res* 15(1):1929–1958

- [136] Sung CL, Ji Y, Tang T, Mak S (2022) Stacking designs: designing multi-fidelity computer experiments with confidence. arXiv preprint arXiv:221100268
- [137] Tachibana Y, Angerami A, Bass S, Cao S, Coleman J, Cunqueiro L, Dai T, Du L, Elfner H, Everett D (2018) Jet substructure modification in a QGP from a multi-scale description of jet evolution with JETSCAPE. arXiv preprint arXiv:181206366
- [138] TF Quant Finance Contributors (2021) TF Quant Finance: TensorFlow based Quant Finance library. URL <https://github.com/google/tf-quant-finance>
- [139] The MathWorks, Inc (2020) MATLAB R2020b. Natick, MA
- [140] The Numerical Algorithms Group (2021) The NAG Library. Oxford, Mark 27 edn
- [141] Tong X (2014) A guaranteed, adaptive, automatic algorithm for univariate function minimization. Master's thesis, Illinois Institute of Technology
- [142] Vihola M (2012) Robust adaptive metropolis algorithm with coerced acceptance rate. *Statistics and Computing* 22(5):997–1008
- [143] Virtanen P, Gommers R, Oliphant TE, Haberland M, Reddy T, Cournapeau D, Burovski E, Peterson P, Weckesser W, Bright J, van der Walt SJ, Brett M, Wilson J, Millman KJ, Mayorov N, Nelson ARJ, Jones E, Kern R, Larson E, Carey CJ, Polat I, Feng Y, Moore EW, VanderPlas J, Laxalde D, Perktold J, Cimrman R, Henriksen I, Quintero EA, Harris CR, Archibald AM, Ribeiro AH, Pedregosa F, van Mulbregt P, Vijaykumar A, Bardelli AP, Rothberg A, Hilboll A, Kloeckner A, Scopatz A, Lee A, Rokem A, Woods CN, Fulton C, Masson C, Häggström C, Fitzgerald C, Nicholson DA, Hagen DR, Pasechnik DV, Olivetti E, Martin E, Wieser E, Silva F, Lenders F, Wilhelm F, Young G, Price GA, Ingold GL, Allen GE, Lee GR, Audren H, Probst I, Dietrich JP, Silterra J, Webber JT, Slavič J, Nothman J, Buchner J, Kulick J, Schönberger JL, de Miranda Cardoso J, Reimer J, Harrington J, Rodríguez JLC, Nunez-Iglesias J, Kuczynski J, Tritz K, Thoma M, Newville M, Kümmerer M, Bolingbroke M, Tartre M, Pak M, Smith NJ, Nowaczyk N, Shebanov N, Pavlyk O, Brodtkorb PA, Lee P, McGibbon RT, Feldbauer R, Lewis S, Tygier S, Sievert S, Vigna S, Peterson S, More S, Pudlik T, Oshima T, Pingel TJ, Robitaille TP, Spura T, Jones TR, Cera T, Leslie T, Zito T, Krauss T, Upadhyay U, Halchenko YO, Vázquez-Baeza Y, Contributors (2020) Scipy 1.0: fundamental algorithms for scientific computing in python. *Nature Methods* 17(3):261–272
- [144] Wahls S, Poor HV (2015) Fast numerical nonlinear Fourier transforms. *IEEE Transactions on Information Theory* 61(12):6957–6974
- [145] Wand MP, Jones MC (1995) Kernel Smoothing. Chapman & Hall, New York
- [146] Wang H, Ma Y (2021) Optimal subsampling for quantile regression in big data. *Biometrika* 108(1):99–112
- [147] Wang H, Zhu R, Ma P (2018) Optimal subsampling for large sample logistic regression. *Journal of the American Statistical Association* 113(522):829–844
- [148] Wang H, Xie L, Cuzzo A, Mak S, Xie Y (2020) Uncertainty quantification for inferring Hawkes networks. In: *Advances in Neural Information Processing Systems*
- [149] Wang H, Xie L, Xie Y, Cuzzo A, Mak S (2022) Sequential change-point detection for mutually exciting point processes over networks. *Technometrics*, to appear
- [150] Yeh ST, Wang X, Sung CL, Mak S, Chang YH, Zhang L, Wu CJ, Yang V (2018) Common proper orthogonal decomposition-based spatiotemporal emulator for design exploration. *AIAA Journal* 56(6):2429–2442
- [151] Yuchi HS, Mak S, Xie Y (2022) Bayesian uncertainty quantification for low-rank matrix completion. arXiv preprint arXiv:210101299, to appear
- [152] Zhang R, Mak S, Dunson D (2022) Gaussian process subspace prediction for model reduction. *SIAM Journal on Scientific Computing* 44(3):A1428–A1449
- [153] Zhang Y (2018) Guaranteed, adaptive, automatic algorithms for univariate integration: Methods, costs and implementation. PhD thesis, Illinois Institute of Technology

- [154] Zhao X (2017) Simulating the Heston model via the QE method with a specified error tolerance. Master's thesis, Illinois Institute of Technology
- [155] Zheng X, Mak S, Xie Y (2021) Online high-dimensional change-point detection using topological data analysis. *Technometrics* , to appear
- [156] Zhou X (2015) Function approximation with kernel methods. PhD thesis, Illinois Institute of Technology
- [157] Zhou X, Hickernell FJ (2016) Tractability of the radial function approximation problem with kernels of a product form. In: [25], pp 583–598, arXiv:1411.0790 [math.NA]