

Taejun Park

Curriculum Vitae

MATH HPNALGS group, EPFL

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Research interests

Randomized algorithms, Numerical linear algebra, Matrix perturbation theory

Employment

2025–present **Postdoctoral Researcher**, *École Polytechnique Fédérale de Lausanne, Switzerland*
High Performance Numerical Algorithms and Simulations group under Prof. Laura Grigori

Education

2021–2025 **DPhil in Mathematics**, *Numerical analysis group, University of Oxford, UK*
‘On the Accuracy and Robustness of Randomised Methods for Matrix Computations’
Supervisor: Prof. Yuji Nakatsukasa

2020–2021 **MSc in Mathematical Sciences**, *University of Oxford, UK*
Awarded with Distinction

2019 **BSc (Hons.) in Mathematics**, *University of Cape Town, South Africa*
Awarded with First Class

2016–2018 **BSc in Mathematics & Applied Mathematics**, *University of Cape Town, South Africa*
Awarded with Distinction

Scholarships & Awards

2026 **DPhil Thesis Prize**, *Mathematical Institute, University of Oxford*
Awarded for an outstanding DPhil thesis in Mathematics

2025 **G-Research PhD Prize**, *First Prize, G-Research*
First place in the PhD Prize in Maths and Data Science, University of Oxford

2021–2025 **Heilbronn Doctoral Partnership**, *Heilbronn Institute for Mathematical Research, University of Oxford*

2019 **Roderick Noble Scholarship**, *University of Cape Town*

2016–2018 **Vice-Chancellor’s Scholarship**, *University of Cape Town*

2016 **Twamley December Scholarship**, *University of Cape Town*

2014 **International Mathematics Olympiad**, *Honourable Mention, South African Team*

Preprints

10. M. Gubler, **T. Park**, A. Bussy, J. Laute, N. Marzari, I. Timrov, L. Grigori, *Randomized Block Davidson Eigensolvers for Plane-Wave Density-Functional Theory*, [arXiv:2608.24529](https://arxiv.org/abs/2608.24529)
9. Y. Chen, Y. Nakatsukasa, A. Narendran, and **T. Park**, *Nyström method for symmetric indefinite matrices*, [arXiv:2608.20531](https://arxiv.org/abs/2608.20531)
8. E.N. Epperly, **T. Park**, and Y. Nakatsukasa, *Fast, High-Accuracy, Randomized Nullspace Computations for Tall Matrices*, [arXiv:2602.16797](https://arxiv.org/abs/2602.16797)
7. A. Bucci, Y. Nakatsukasa, and **T. Park**, *Numerical Stability of the Nyström Method*, [arXiv:2511.15583](https://arxiv.org/abs/2511.15583)
6. N. Pritchard, **T. Park**, Y. Nakatsukasa, and P.-G. Martinsson, *Fast Rank Adaptive CUR via a Recycled Small Sketch*, [arXiv:2509.21963](https://arxiv.org/abs/2509.21963)

Publications

5. **T. Park**, and Y. Nakatsukasa, *Approximating Sparse Matrices and their Functions using Matrix-vector products*, Applied and Computational Harmonic Analysis, 10.1016/j.acha.2026.101869.
4. **T. Park**, and Y. Nakatsukasa, *Low-rank approximation of parameter-dependent matrices via CUR decomposition*, SIAM Journal on Scientific Computing, doi: 10.1137/24M1683998
3. **T. Park**, and Y. Nakatsukasa, *Accuracy and Stability of CUR decompositions with Oversampling*, SIAM Journal on Matrix Analysis and Applications, doi: 10.1137/24M1660346.
2. Y. Nakatsukasa, and **T. Park**, *Randomized Low-Rank Approximation for Symmetric Indefinite Matrices*, SIAM Journal on Matrix Analysis and Applications, (2023), doi: 10.1137/22M1538648.
1. **T. Park**, and Y. Nakatsukasa, *A fast randomized algorithm for computing an approximate null space*, BIT Numerical Mathematics, (2023), doi: 10.1007/s10543-023-00979-7.

Talks, conferences and summer schools

- Jul. 2026 **Invited Talk**, Chonnam National University, South Korea, "Randomized Techniques for Numerical Linear Algebra"
- Jun. 2025 **Biennial Numerical Analysis Conference**, University of Strathclyde, UK, "Low-rank approximation of parameter-dependent matrices via CUR decomposition"
- Jun. 2025 **Householder Symposium XXII**, Ithaca, NY USA, "AdaCUR: Efficient Low-rank Approximation of Parameter-dependent matrices $A(t)$ via CUR decomposition"
- May 2025 **Numerical Analysis Seminar**, University of Oxford, UK, "Low-rank approximation of parameter-dependent matrices via CUR decomposition"
- Sep. 2024 **Imperial-UCL Numerics Seminar**, University College London, UK, "Low-rank approximation of parameter-dependent matrices via CUR decomposition"
- Jun. 2024 **NumPI seminar**, University of Pisa, Italy, "A low-rank approximation of parameter-dependent matrices via CUR decomposition"
- Jun. 2024 **PYSANUM seminar**, University of Pisa, Italy, "Accuracy and stability of randomized low-rank approximations"
- May 2024 **SIAM LA24**, Paris, France, "Randomized Nyström Method for Symmetric Indefinite Matrices", Received SIAM Student Travel Award
- Sep. 2023 **10th Heidelberg Laureate Forum**, Heidelberg, Germany
- Aug. 2023 **ICIAM 2023**, Tokyo, Japan, "Randomized Nyström approximation for symmetric indefinite matrices"
- Aug. 2023 **Gene Golub SIAM Summer School**, Lehigh University, PA USA, Topic: Quantum Computing and Optimization
- Jun. 2023 **Numerical Analysis Seminar**, University of Oxford, UK, "Approximating Functions of Sparse Matrices using Matrix-vector Products"
- Feb. 2023 **SIAM CSE23**, Amsterdam, Netherlands, "A Fast Randomized Algorithm for Computing the Null Space"
- Feb. 2022 **Numerical Analysis Seminar**, University of Oxford, UK, "Fast randomized null space algorithm"

Teaching Experiences

EPFL, Switzerland

- 2025– **Teaching Assistant**, Advanced Linear Algebra I (Fall 2025), Analysis I (Fall 2026)

University of Oxford, UK

- 2025 **Stipendiary Lecturer**, Balliol College, Numerical Analysis, Computational Mathematics, Statistics and Data Analysis

2022–2025 **Tutor**, *Optimisation for Data Science (2025)*, *Numerical Linear Algebra (2022, 2024)*, *Approximation of Functions (2022)*

2021–2023 **Teaching Assistant**, *Continuous Optimization (2023)*, *Random Matrix Theory (2022)*, *Information Theory (2022)*, *Numerical Linear Algebra (2021)*

University of Cape Town, South Africa

2017–2019 **Tutor**, *Calculus (2017–2019)*, *Real Analysis (2019)*

Supervision

Semester Projects at EPFL

Fall 2025 **Yuekai Yan**, *Improving stability and performance of s -step Krylov subspace methods with randomization*, Co-supervised with Laura Grigori, Igor Simunec

Service

Reviewer for SIAM Journal on Matrix Analysis and Applications (SIMAX), SIAM Journal on Scientific Computing (SISC), Linear Algebra and its Applications (LAA), Numerical Linear Algebra with Applications (NLAA), and Journal of Scientific Computing (JSC).

Technical Skills and Languages

Programming **Matlab, Python, $\LaTeX$**

Languages **English, Korean**