

Erin Claire Carson

Curriculum Vitae

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Education

- 2009
2015 — Ph.D. in Computer Science, with a Designated Emphasis in Computational and Data Science and Engineering, University of California Berkeley.
- 2005
2009 — B.S. in Computer Science, with Minors in Applied Mathematics and Materials Science, University of Virginia.

PhD Thesis

- Title *Communication-avoiding Krylov Subspace Methods in Theory and Practice*
- Supervisors Professor James Demmel & Professor Armando Fox
- Description This thesis evaluates tradeoffs between performance and accuracy in communication-avoiding Krylov subspace methods for high-performance scientific codes.

Professional Appointments

- 2022 — Assistant Professor, Department of Numerical Mathematics, Faculty of Mathematics and Physics, Charles University.
- 2019
2022 — PRIMUS Research Fellow, Department of Numerical Mathematics, Faculty of Mathematics and Physics, Charles University.
- 2018
2019 — Postdoctoral Researcher, Department of Numerical Mathematics, Faculty of Mathematics and Physics, Charles University.
- 2015
2018 — Courant Instructor/Assistant Professor, Courant Institute of Mathematical Sciences, New York University.

Grants

- 2023
2028 — Principal Investigator, “Analyzing and Exploiting Inexactness in Exascale Matrix Computations”, ERC Starting Grant No. 101075632, European Research Council ($\approx 1,500,00$ EUR).
- 2020
2023 — Principal Investigator/Subcontractor, “Mixed Precision Numerical Linear Algebra”, Subcontract Awards B639388, B644596 and B650935, U.S. Exascale Computing Project (Primary award 17-SC-20-SC), LLNL - Charles University ($\approx 190,000$ EUR).
- 2019
2022 — Principal Investigator of the PRIMUS Research Project PRIMUS/19/SCI/11, “Scalable and Accurate Numerical Linear Algebra for Next-Generation Hardware”, Charles University ($\approx 345,000$ EUR).

Publications

Journal Papers

- 2025 — E. Carson, X. Chen, and X. Liu, *Mixed precision HODLR matrices*, SIAM Journal on Scientific Computing (accepted; in press).
- 2025 — E. Carson and I. Daužickaitė, *A Comparison of Mixed Precision Iterative Refinement Approaches for Least-Squares Problems*, SIAM Journal on Matrix Analysis and Applications (accepted; in press).

- 2025 E. Carson, K. Lund, Y. Ma, and E. Oktay, *Reorthogonalized Pythagorean Variants of Block Classical Gram-Schmidt*, SIAM Journal on Matrix Analysis and Applications, 46(1), 2025, pp. 310-340.
- 2024 P. Vacek, E. Carson, and K. M. Soodhalter, *The Effect of Approximate Coarsest-Level Solves on the Convergence of Multigrid V-Cycle Methods*, SIAM Journal on Scientific Computing, 46(4), 2024, pp. A2634-A2659.
- 2024 E. Carson, J. Liesen, and Z. Strakoš, *Towards Understanding CG and GMRES Through Examples*, Linear Algebra and its Applications, 692, 2024, pp. 241-291.
- 2024 E. Carson and I. Daužickaitė, *Single-pass Nyström Approximation in Mixed Precision*, SIAM Journal on Matrix Analysis and Applications, 45(3), 2024, pp. 1361-1391.
- 2024 E. Carson and I. Daužickaitė, *The Stability of Split-Preconditioned FGMRES in Four Precisions*, Electronic Transactions on Numerical Analysis, 60, 2024, pp. 40-58.
- 2024 E. Oktay and E. Carson, *Mixed Precision Rayleigh Quotient Iteration for Total Least Squares Problems*, Numerical Algorithms, 96(2), 2024, pp. 777-798.
- 2024 S. Thomas, E. Carson, M. Rozložník, A. Carr, and K. Świrydowicz, *Iterated Gauss-Seidel GMRES*, SIAM Journal on Scientific Computing, 46(2), 2024, pp. S254-S279.
- 2023 E. Carson and N. Khan, *Mixed Precision Iterative Refinement with Sparse Approximate Inverse Preconditioning*, SIAM Journal on Scientific Computing, 45(3), 2023, pp. C131-C153.
- 2022 E. Oktay and E. Carson, *Multistage Mixed Precision Iterative Refinement*, Numerical Linear Algebra with Applications, 2022, e2434.
- 2022 E. Carson, K. Lund, M. Rozložník, and S. Thomas, *Block Gram-Schmidt Algorithms and their Stability Properties*, Linear Algebra and its Applications, 638, 2022, pp. 150-195.
- 2021 E. Carson, T. Gergelits, and I. Yamazaki, *Mixed Precision s-step Lanczos and Conjugate Gradient Algorithms*, Numerical Linear Algebra with Applications, 2021, e2425.
- 2021 E. Carson, K. Lund, and M. Rozložník, *The Stability of Block Variants of Classical Gram-Schmidt*, SIAM Journal on Matrix Analysis and Applications, 42(3), 2021, pp. 1365-1380.
- 2021 A. Abdelfattah, H. Anzt, E. G. Boman, E. Carson, et al., *A Survey of Numerical Methods Utilizing Mixed Precision Arithmetic*, International Journal of High Performance Computing Applications, 35(4), 2021, pp. 344-369.
- 2020 E. Carson, N. J. Higham, and S. Pranesh, *Three-Precision GMRES-Based Iterative Refinement for Least Squares Problems*, SIAM Journal on Scientific Computing, 42(6), 2020, pp. A4063-A4083.
- 2020 T. Chen and E. Carson, *Predict-and-Recompute Conjugate Gradient Variants*, SIAM Journal on Scientific Computing, 42(5), 2020, pp. A3084-A3108.
- 2020 E. Carson, *An Adaptive s-step Conjugate Gradient Algorithm with Dynamic Basis Updating*, Applications of Mathematics, 65(2), 2020, pp. 123-151.
- 2020 E. Carson and Z. Strakoš, *On the Cost of Iterative Computations*, Philosophical Transactions of the Royal Society A, 378(2166), 2020.
- 2018 E. Carson, M. Rozložník, Z. Strakoš, P. Tichý, and M. Tůma, *The Numerical Stability Analysis of Pipelined Conjugate Gradient Methods: Historical Context and Methodology*, SIAM Journal on Scientific Computing, 40(5), 2018, pp. A3549-3580.
- 2018 E. Carson, *The Adaptive s-step Conjugate Gradient Method*, SIAM Journal on Matrix Analysis and Applications, 39(3), 2018, pp. 1318-1338.
- 2018 E. Carson and N. Higham, *Accelerating the Solution of Linear Systems by Iterative Refinement in Three Precisions*, SIAM Journal on Scientific Computing, 40(2), 2018, pp. A817-A847 .
- 2017 E. Carson and N. Higham, *A New Analysis of Iterative Refinement and its Application to Accurate Solution of Ill-Conditioned Sparse Linear Systems*, SIAM Journal on Scientific Computing, 39(6), 2017, pp. A2834-A2856.

- 2016
 E. Solomonik, E. Carson, N. Knight, and J. Demmel, *Tradeoffs between Synchronization, Communication, and Computation in Parallel Linear Algebra Computations*, ACM Transactions on Parallel Computing, 3(1), 2016, pp. 3:1-3:47.
- 2015
 E. Carson and J. Demmel, *Accuracy of the s-Step Lanczos Method for the Symmetric Eigenproblem in Finite Precision*, SIAM Journal on Matrix Analysis and Applications, 36(2), 2015, pp. 793-819.
- 2014
 E. Carson, N. Knight, and J. Demmel, *An Efficient Deflation Technique for the Communication-Avoiding Conjugate Gradient Method*, Electronic Transactions on Numerical Analysis, 43, 2014, pp. 125-141.
- 2014
 G. Ballard, E. Carson, J. Demmel, M. Hoemmen, N. Knight, and O. Schwartz, *Communication Lower Bounds and Optimal Algorithms for Numerical Linear Algebra*, Acta Numerica, 23, 2014, pp. 1-155.
- 2014
 N. Knight, E. Carson and J. Demmel, *Exploiting Data Sparsity in Parallel Matrix Powers Computations*, in Parallel Processing and Applied Mathematics, R. Wyrzykowski, J. Dongarra, K. Karczewski, and J. Waniewski, eds., Lecture Notes in Computer Science, 8384, Springer Berlin Heidelberg, 2014, pp. 15-25.
- 2014
 E. Carson and J. Demmel, *A Residual Replacement Strategy for Improving the Maximum Attainable Accuracy of s-Step Krylov Subspace Methods*, SIAM Journal on Matrix Analysis and Applications, 35(1), 2014, pp. 22-43.
- 2013
 E. Carson, N. Knight, and J. Demmel, *Avoiding Communication in Nonsymmetric Lanczos-based Krylov Subspace Methods*, SIAM Journal on Scientific Computing, 35(5), 2013, pp. S42-S61.

Conference Proceedings

- 2023
 E. Oktay and E. Carson, *Using Mixed Precision in Low-Synchronization Reorthogonalized Block Classical Gram-Schmidt*, In Proceedings in Applied Mathematics and Mechanics, 23, 2023, e202200060.
- 2023
 E. Oktay and E. Carson, *Mixed Precision GMRES-Based Iterative Refinement with Recycling*, In Proceedings of Programs and Algorithms of Numerical Mathematics, 21, 2023, pp. 149-162.
- 2022
 E. Carson, B. Kelley, and I. Yamazaki, *Mixed Precision s-step Conjugate Gradient with Residual Replacement on GPUs*, in Proceedings of the 36th IEEE International Parallel and Distributed Processing Symposium (IPDPS), 2022, pp. 886-896.
- 2016
 E. Carson, J. Demmel, L. Grigori, N. Knight, P. Koanantakool, O. Schwartz, O. H.V. Simhadri, *Write-Avoiding Algorithms*, in Proceedings of the 30th IEEE International Parallel and Distributed Processing Symposium (IPDPS), 2016, pp. 648-658.
- 2014
 E. Solomonik, E. Carson, N. Knight, and J. Demmel, *Tradeoffs Between Synchronization, Communication, and Work in Parallel Linear Algebra Computations*, in Proceedings of the 26th ACM Symposium on Parallelism in Algorithms and Architectures (SPAA), 2014, pp. 307-318.
- 2014
 S. Williams, E. Carson, M. Lijewski, N. Knight, A. Almgren, B. Van Straalen, and J. Demmel, *s-Step Krylov Subspace Methods as Bottom Solvers for Geometric Multigrid*, in Proceedings of the 28th IEEE International Parallel and Distributed Processing Symposium (IPDPS), 2014, pp. 1149-1158.
- 2007
 J. Carnahan, S. Policastro, E. Carson, P. Reynolds Jr., and R. Kelly, *Using Flexible Points in a Developing Simulation of Selective Dissolution in Alloys*, in Proceedings of the 39th Winter Simulation Conference, IEEE Press, 2007, pp. 891-899.

Presentations

Invited Plenary, Keynote, and Panelist Talks

- 2025
Plenary Talk: The European Conference on Numerical Mathematics and Advanced Applications (ENUMATH), to be held in Heidelberg, Germany, September 1-5, 2025.

- 2025 ● **Plenary Talk:** 29th International Conference on Domain Decomposition Methods, to be held in Milan, Italy, June 23-27, 2025.
- 2024 ● **Ceremonial Lecture:** “Balancing Inexactness in Matrix Computations”, Jarník Lecture, Prague, Czech Republic, October 9, 2024.
- 2024 ● **Plenary Talk:** “Inexact Matrix Computations”, 12th Conference on Applied Mathematics and Scientific Computing, Dubrovnik, Croatia, September 25, 2024.
- 2023 ● **Plenary Talk:** “Balancing Inexactness in Matrix Computations”, 25th Conference of the International Linear Algebra Society (ILAS), Madrid, Spain, June 15, 2023.
- 2022 ● **Plenary Talk:** “Mixed Precision Iterative Refinement”, XXI Householder Symposium on Numerical Linear Algebra, Selva di Fasano, Italy, June 16, 2022.
- 2022 ● **Plenary Talk:** “Opportunities for Mixed Precision in Preconditioned Iterative Methods”, International Conference on Preconditioning Techniques for Scientific and Industrial Applications (Preconditioning 2022), Chemnitz, Germany, June 9, 2022.
- 2019 ● **Invited Panelist:** “The Road to Exascale and Beyond Is Paved by Software: How Algorithms, Libraries and Tools Will Make Exascale Performance Real”, IEEE International Conference for High Performance Computing, Networking, Storage and Analysis (Supercomputing ‘19), November 17-22, 2019.
- 2019 ● **Keynote Talk:** “Iterative Refinement in Three Precisions”, 3rd Workshop on Power-Aware Computing (PACO ‘19), Magdeburg, Germany, November 5-6, 2019.
- 2019 ● **Keynote Talk:** “The Cost of Iterative Computations”, High-Performance Computing in Science and Engineering (HPCSE19), Soláň, Czech Republic, May 20-23, 2019.
- 2017 ● **Plenary Talk:** “The Behavior of Synchronization-Reducing Variants of the Conjugate Gradient Method in Finite Precision”, Householder Symposium XX, Blacksburg, Virginia, June 19, 2017.
- 2017 ● **Plenary Talk:** “High-Performance Krylov Subspace Method Variants and their Behavior in Finite Precision”, High Performance Computing in Science and Engineering (HPCSE17), Soláň, Czech Republic, May 24, 2017.

Selection of Other Invited Talks

- 2024 ● **Invited Talk:** “Balancing Inexactness in Matrix Computations”, Indo-German Workshop on Hardware-Aware Scientific Computing, Heidelberg University, Heidelberg, October 29, 2024.
- 2024 ● **Invited Talk:** “Balancing Inexactness in Large-Scale Matrix Computations”, Nordic Numerical Linear Algebra Meeting, University of Southern Denmark, Odense, June 17, 2024.
- 2022 ● **Invited Talk:** “Recent Progress in Mixed Precision Numerical Linear Algebra”, Advances in Numerical Linear Algebra: Celebrating the 60th Birthday of Nick Higham, Manchester, UK, July 8, 2022.
- 2023 ● **Invited Seminar Talk:** “Balancing Inexactness in Matrix Computations”, SimTech/Math Colloquium, University of Stuttgart, July 13, 2023.
- 2023 ● **Invited Seminar Talk:** “Balancing Inexactness in Matrix Computations”, Computational Mathematics and Applications Seminar, Mathematical Institute, University of Oxford, May 25, 2023.
- 2023 ● **Invited Seminar Talk:** “Using Mixed Precision in Numerical Linear Algebra”, Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University, Prague, CZ, March 27, 2023.
- 2023 ● **Invited Seminar Talk:** “70 Years of Krylov Subspace Methods”, Mathematics Seminar, Trinity College Dublin, January 25, 2023.
- 2022 ● **Invited Seminar Talk:** “Improving the Numerical Behavior of Communication-Avoiding Krylov Subspace Methods”, Faculty of Computer Science Seminar, University of Vienna, September 1, 2022.
- 2022 ● **Invited Seminar Talk:** “Challenges and Opportunities in Mixed Precision Numerical Linear Algebra”, Innovative Computing Laboratory, University of Tennessee, online, May 13, 2022.

- 2022 ● **Invited Talk:** “Exploiting Mixed Precision in Numerical Linear Algebra”, 47th Annual University of Arkansas Spring Lecture Series: Numerical Linear Algebra: from Scientific Computing to Data Science Applications, University of Arkansas, May 4, 2022.
- 2021 ● **Invited Talk:** “High Performance Mixed Precision Numerical Linear Algebra”, Numerical Methods and High Performance Computing for industrial applications (SimRace), IFP Energies Nouvelles, France, December 3, 2021.
- 2021 ● **Invited Seminar Talk:** “Exploiting Mixed Precision in Numerical Linear Algebra”, MATH-ICSE Seminar Series, EPFL, Switzerland, November 2, 2021.
- 2021 ● **Invited Seminar Talk:** “Exploiting Mixed Precision in Numerical Linear Algebra”, Center for Control, Dynamical Systems, and Computation (CCDC) Seminar Series, U.C. Santa Barbara, online, October 29, 2021.
- 2021 ● **Invited Seminar Talk:** “The Cost of Iterative Computations at Scale”, Irish Numerical Analysis Forum, Trinity College Dublin, online, July 1, 2021.
- 2021 ● **Invited Seminar Talk:** “What Do We Know About Block Gram-Schmidt?”, E-NLA Seminar, online, February 24, 2021.
- 2020 ● **Invited Seminar Talk:** “High Performance Mixed Precision Numerical Linear Algebra”, Scientific Computing and Numerics (SCAN) Seminar, Cornell University, online, November 9, 2020.
- 2020 ● **Invited Seminar Talk:** “High Performance Mixed Precision Numerical Linear Algebra”, Numerical Mathematics (NUMA) Seminar, KU Leuven, online, October 29, 2020.
- 2019 ● **Invited Talk:** “The Cost of Iterative Computations”, Advanced Solvers for Modern Architectures, Muenster, Germany, November 11-13, 2019.
- 2019 ● **Invited Talk:** “Iterative Linear Algebra in the Exascale Era”, Numerical Algorithms for High-Performance Computational Science, The Royal Society, London, UK, April 8-9, 2019.
- 2019 ● **Invited Lectures:** “High Performance Variants of Krylov Subspace Methods, Parts I and II”, Seminar on Numerical Analysis and Winter School, Ostrava, Czech Republic, January 21-25, 2019.
- 2017 ● **Invited Seminar Talk:** “Communication-Avoiding Algorithms: Challenges and New Results”, Numerical Analysis and Scientific Computing Seminar, University of Manchester, UK, July 19, 2017.
- 2017 ● **Invited Seminar Talk:** “High-Performance Krylov Subspace Method Variants and their Behavior in Finite Precision”, MORE Seminar, Charles University, Prague, Czech Republic, May 15, 2017.
- 2016 ● **Invited Seminar Talk:** “Performance and Stability Tradeoffs in Large-Scale Krylov Subspace Methods”, Applied Mathematics and Scientific Computing Seminar, Temple University, November 16, 2016.
- 2014 ● **Invited Seminar Talk:** “Communication-Avoiding Krylov Subspace Methods in Finite Precision”, Linear Algebra and Optimization Seminar, ICME, Stanford University, December 4, 2014.

Honors and Awards

- 2025 ● **James H. Wilkinson Prize in Numerical Analysis and Scientific Computing.**
- 2017 ● **Finalist, Householder Prize, July 2017.**
- 2013 ● **Rising Stars in EECS, *Selected Participant*, MIT, November 2013.**
- 2010-2013 ■ **National Defense Science and Engineering Graduate Fellowship.**
- 2009 ● **CRA Outstanding Undergraduate Research Award, Runner-up.**
- 2008 ● **Microsoft Technical Scholarship Award.**
- 2007 ● **Lockheed Martin Distinguished Scholar Award.**

2007 ●
Computing and Communications Scholarship for Undergraduate Women, University of Virginia.

Professional Activities

Professional Leadership

2024
2026 ■ Secretary, *SIAM Activity Group on Supercomputing (SIAG/SC)*.

2022
2028 ■ Co-chair, *GAMM Activity Group on Applied and Numerical Linear Algebra*.

Editorial and Project Evaluation

2025 ■ Associate Editor, *SIAM Journal on Matrix Analysis and Applications*.

2025 ● Proceedings Deputy Chair, *ISC High Performance, Hamburg, Germany, June 10-13, 2025*.

2023
2025 ■ Access Resource Committee Member, *The European High-Performance Computing Joint Undertaking (EuroHPC)*.

2022
2024 ■ Associate Editor, *ACM Transactions on Parallel Computing (TOPC)*.

2021
2023 ■ Access Committee Member, *Partnership for Advanced Computing in Europe (PRACE)*.

2009
2015 ■ Feature Editor for *ACM XRDS Magazine*, Association for Computing Machinery, New York, NY.

Conference Organizing Committees

2026 ● Organizing Committee Member, *SIAM Conference on Parallel Processing for Scientific Computing (PP26)*, Berlin, Germany, March 2-6, 2026.

2024 ● Organizing Committee Member, *SIAM Conference on Applied Linear Algebra (LA24)*, Paris, France, May 13-17, 2024.

2023 ● Organizer (with D. Kressner, J. Liesen, R. Peng, and N. Srivastava), *BIRS Workshop: “Perspectives on Matrix Computations: Theoretical Computer Science Meets Numerical Analysis”*, Banff International Research Station, Banff, CA, March 5-10, 2023.

2023 ● Organizing Committee Member, *SIAM Conference on Computational Science and Engineering (CSE23)*, February 26 - March 3, 2023.

2022 ● Organizing Committee Member, *GAMM Workshop on Applied and Numerical Linear Algebra (GAMM ANLA ‘22)*, Prague, Czech Republic, September 22-23, 2022.

Conference Program Committees

2025 ● Program Committee Member, *Platform for Advanced Scientific Computing (PASC ‘25)*, Zurich, Switzerland, June 16-18, 2025, Track: “Computational Methods and Applied Mathematics”.

2025 ● Program Committee Member, *IEEE International Parallel and Distributed Processing Symposium (IPDPS ‘25)*, June 3-7, 2025, Track: “Algorithms”.

2024 ● Vice Chair, *IEEE International Conference for High Performance Computing, Networking, Storage and Analysis (Supercomputing ‘24)*, Atlanta, USA, November 18-22, 2024, Track: “Technical Papers - Algorithms”.

2024 ● Program Committee Member, *Euro-Par 2024*, Madrid, Spain, August 26-30, 2024, Track: “Theory and Algorithms”.

2024 ● Program Committee Member, *ACM Symposium on Parallelism in Algorithms and Architectures (SPAA ‘24)*, Nantes, France, June 17-21, 2024.

2024 ● Program Committee Member, *International Conference on High Performance Computing in Asia Pacific Region (HPCAsia2024)*, Nagoya, Japan, January 25-27, 2024, Track: “Applications and Algorithms”.

- 2023 **Program Committee Member**, *IEEE International Conference for High Performance Computing, Networking, Storage and Analysis (Supercomputing '23)*, Denver, USA, November 12-17, 2023, Track: "Technical Papers - Algorithms".
- 2023 **Program Committee Member**, *International Conference on Parallel Processing (ICPP '23)*, Salt Lake City, USA, August 7-10, 2023, Track: "Algorithms".
- 2023 **Program Committee Member**, *ACM Symposium on Parallelism in Algorithms and Architectures (SPAA '23)*, Orlando, USA, June 16-19, 2023.
- 2022 **Program Committee Member**, *IEEE International Conference for High Performance Computing, Networking, Storage and Analysis (Supercomputing '22)*, St. Louis, USA, November 13-18, 2022, Track: "Technical Papers - Algorithms".
- 2022 **Program Committee Member**, *IEEE International Conference on Cluster Computing (Cluster '22)*, Heidelberg, DE, September 6-9, 2022, Track: "Algorithms and Applications".
- 2022 **Program Committee Member**, *International Conference on Parallel Processing (ICPP '22)*, Bordeaux, FR, August 29-September 1, 2022, Track: "Multidisciplinary".
- 2022 **Program Committee Member**, *IEEE International Parallel and Distributed Processing Symposium (IPDPS '22)*, May 30 - June 3, 2022, Track: "Algorithms".
- 2022 **Program Committee Member**, *Principles and Practice of Parallel Programming (PPoPP '22)*, February 16-22, 2022.
- 2021 **Program Committee Member**, *IEEE International Conference for High Performance Computing, Networking, Storage and Analysis (Supercomputing '21)*, St. Louis, USA, November 14-19, 2021, Track: "Technical Papers - Algorithms".
- 2021 **Program Committee Member**, *IEEE International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD '21)*, Belo Horizonte, Brazil, October 26-29, 2021, Track: "Parallel Applications and Algorithms".
- 2021 **Program Committee Member**, *Platform for Advanced Scientific Computing (PASC '21)*, online, July 5-9, 2021, Track: "Computer Science and Applied Mathematics".
- 2021 **Program Committee Member**, *IEEE International Parallel and Distributed Processing Symposium (IPDPS '21)*, online, May 17-21, 2021, Track: "Algorithms".
- 2021 **Program Committee Member**, *Principles and Practice of Parallel Programming (PPoPP '21)*, online, February 27 - March 3, 2021.
- 2020 **Program Committee Local Chair**, *Euro-Par 2020*, online, August 24-28, 2020, Track: "Parallel Numerical Methods and Applications".
- 2019 **Primary Program Committee Member**, *IEEE International Parallel & Distributed Processing Symposium (IPDPS '19)*, Rio de Janeiro, Brazil, May 20-24, 2019, Track: "Algorithms".
- 2018 **Program Committee Member**, *IEEE International Conference for High Performance Computing, Networking, Storage and Analysis (Supercomputing '18)*, Dallas, USA, November 11-16, 2018, Tracks: "Technical Papers - Algorithms" and "Doctoral Showcase".
- 2018 **Program Committee Member**, *SIAM Workshop on Combinatorial Scientific Computing (CSC18)*, Bergen, Norway, June 6-8, 2018.
- 2016 **Program Committee Member**, *Technical Papers - Algorithms Track, IEEE International Conference for High Performance Computing, Networking, Storage and Analysis (Supercomputing '16)*, Salt Lake City, USA, November 13-18, 2016.

Minisymposia and Seminar Organization

- 2023 **Minisymposium Co-organizer** (with E. Oktay and T. Mary), "Mixed precision computations in theory and practice", *ENUMATH 2023*, Lisbon, Portugal, September 4-8, 2023.
- 2023 **Minisymposium Co-organizer** (with I. Daužickaitė), "Saddle point problems: solvers and preconditioners", *29th Biennial Numerical Analysis Conference*, Glasgow, Scotland, June 27 - 30, 2023.

- 2023 ● **Minisymposium Co-organizer** (with N.J. Higham and T. Mary), “*Mixed Precision Algorithms in Numerical Linear Algebra*”, *SIAM Conference on Computational Science and Engineering (CSE23)*, February 26 - March 3, 2023.
- 2022 ● **Young Researchers’ Minisymposium Co-organizer** (with J. Blechta), “*The Push to Exascale: High Performance Numerical Linear Algebra on Modern Hardware*”, *92nd Annual Meeting of the International Association of Applied Mathematics and Mechanics (GAMM ‘22)*, Aachen, Germany, August 15-19, 2022.
- 2022 ● **Minisymposium Co-organizer** (with K. Soodhalter and P. Vacek), “*Reusing Information in Iterative Methods*”, *27th International Conference on Domain Decomposition Methods (DD ‘22)*, Prague, Czech Republic, July 25-29, 2022.
- 2022 ● **Focus Session Co-organizer** (with I. Daužickaitė), “*Mixed Precision in Low-Rank Approximation and Randomization*”, *ISC High Performance 2022*, Hamburg, Germany, May 29 - June 2, 2022.
- 2022 ■ **Scientific Committee Member**, *E-NLA Seminar*.
- 2021 ● **Minisymposium Co-organizer** (with H. Anzt and U. Meier Yang), “*Multiprecision Numerics in Scientific High Performance Computing*”, *Platform for Advanced Scientific Computing (PASC ‘21)*, online, July 5-9, 2021.
- 2021 ● **Minisymposium Co-organizer** (with K. Lund and K. Soodhalter), “*Block Krylov Subspace Methods for Scientific Computing*”, *SIAM Conference on Applied Linear Algebra (LA21)*, online, May 17-21, 2021.
- 2019 ● **Minisymposium Co-organizer** (with J. Šístek and P. Arbenz), “*Numerical Methods for Massively Parallel Computations*”, *Modelling 2019*, Olomouc, Czech Republic, September 16-20, 2019.
- 2019 ● **Minisymposium Co-organizer** (with A. Greenbaum), “*Roundoff Error in High-Performance Implementations of CG/Lanczos-type Solvers*”, *SIAM Conference on Computational Science and Engineering (CSE19)*, Spokane, Washington, February 25 - March 1, 2019.
- 2018 ● **Minisymposium Co-organizer** (with S. Cools), “*Scalable Communication-Avoiding and -Hiding Krylov Subspace Methods*”, *SIAM Conference on Parallel Processing for Scientific Computing (PP18)*, Tokyo, Japan, March 7-10, 2018.
- 2017 ● **Minisymposium Organizer**, *MS76/93: “Communication-Avoiding Algorithms”*, *SIAM Annual Meeting (AN17)*, Pittsburgh, USA, July 10-14, 2017.
- 2016 ● **Minisymposium Co-organizer** (with L. Grigori), “*Minimizing Communication in Numerical Algorithms*”, *SIAM Conference on Parallel Processing for Scientific Computing (PP16)*, Paris, France, April 12-15, 2016.
- 2015 ● **Minisymposium Organizer**, “*Approaches to Reducing Communication in Krylov Subspace Methods*”, *SIAM Conference on Applied Linear Algebra (LA15)*, Atlanta, Georgia, October 26-30, 2015.

Supervised Theses

Current Supervised Theses

- Bachelors’s Lukáš Chrást (enrolled 2024)
- PhD Petr Vacek (enrolled 2019), Ioannis Thanasis (enrolled 2024), Thomas Bake Arenas (enrolled 2024)

Previous Supervised Theses

- Bachelor’s Jakub Hercík (graduated 2022)
- Master’s Josef Martínek (graduated 2023; awarded the Ivo Marek prize), Jakub Hercík (graduated 2024)
- PhD Eda Oktay (graduated 2024)

Teaching Experience

2020

NMNV468: Numerical Linear Algebra for Data Science and Informatics, Instructor, Charles University, Summer 19/20, Summer 21/22, Summer 22/23, Summer 23/24.

2019

NMNV565: High Performance Computing for Computational Science, Instructor, Charles University, Winter 19/20, Winter 20/21, Winter 22/23, Winter 23/24, Winter 24/25.

2017

MATH-UA 140: Linear Algebra, Instructor, New York University, Fall 2017.

2016

2018

DS-GA 1004: Big Data, Instructor, New York University, Spring 2016, Spring 2017, Spring 2018.

2015

2016

MATH-UA 120: Discrete Mathematics, Instructor, New York University, Fall 2015, Fall 2016.