

Dr. STEVEN ALEXANDER WRIGHT
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Computer Science
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Employment

Lecturer

Lecturer
Computer Science
University of York
Deramore Lane, York
30 Jul 2018 → 30 Nov 2022

Senior Lecturer

Senior lecturer
Computer Science
University of York
Deramore Lane, York
1 Dec 2022 → present

Honorary Research Fellow

University of Warwick
United Kingdom
1 Aug 2018 → 31 Jul 2021

Research outputs

Development of the EPOCH and EPOC++ Codes

Goffrey, T., Bennett, K., Arber, T. D., MORRIS, S., Gosling, B., Wright, S. A., Naden, A. J., BULUT, S. & RIDGERS, C. P., 25 Dec 2025.

Investigating Performance, Portability, and Productivity with a Simple Computational Fluid Dynamics Solver

SMITH, M. & Wright, S. A., 16 Dec 2025.

Experiences of Porting Structured and Unstructured Stencil Applications to FPGA using SYCL

Storkey, Z., Wright, S. A. & Gray, I., 16 Nov 2025, *SC Workshops 25: Proceedings of the SC'25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*. ACM, p. 1496-1501 6 p. (International Conference for High Performance Computing, Networking, Storage and Analysis).

Exploring the Feasibility of Novel 3D Polyhedrally-Tiled Computing Arrays

Crispin-Bailey, C., Thuphairo, P., Austin, J., Wright, S. A. & Moulds, A., 17 Sept 2025, In: *IEEE Access*. 13, p. 159685-159713 29 p., 11146660.

The P3 Explorer: An Open Database of Performance, Portability, and Productivity

Smith, M., Wright, S. A., Lantra, Z. & Mudalige, G. R., 12 Mar 2025, *33rd Euromicro International Conference on Parallel, Distributed, and Network-Based Processing*. IEEE, 6 p. (Euromicro Workshop on Parallel and Distributed Processing.; vol. 2025).

Re-engineering the EPOCH PIC code in C++

Bennett, K., Morris, S., Goffrey, T., Arber, T., Wright, S. A., Naden, A. & Bulut, S., 16 Dec 2024.

The P3 Explorer: Exploring the Performance, Portability, and Productivity Wilderness

Smith, M. A., Wright, S. A., Lantra, Z. & Mudalige, G. R., 17 Nov 2024.

OP-PIC - An Unstructured-Mesh Particle-in-Cell DSL for Developing Nuclear Fusion Simulations

Lantra, Z., Wright, S. A. & Mudalige, G. R., 12 Aug 2024, *53rd International Conference on Parallel Processing Gotland, Sweden*. ACM, 14 p. (Proceedings of the International Conference on Parallel Processing; no. 2024).

Developing Performance Portable Plasma Edge Simulations: A Survey

Wright, S. A., Ridgers, C. P., Mudalige, G. R., Lantra, Z., Williams, J., Sunderland, A., Thorne, S. & Arter, W., May 2024, In: *Computer Physics Communications*. 298, 47 p., 109123.

Optimizing Write Performance for Checkpointing to Parallel File Systems Using LSM-Trees

Bulut, S. & Wright, S. A., 12 Nov 2023, *SC-W '23: Proceedings of the SC '23 Workshops of The International Conference on High Performance Computing, Network, Storage, and Analysis*. ACM, p. 492-501 10 p.

Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS)

Wright, S. A., Hammond, S. D. & Jarvis, S. A., 12 Nov 2023, *2023 International Conference on High Performance Computing, Network, Storage, and Analysis, SC Workshops 2023*. p. 1229-1230 2 p. (ACM International Conference Proceeding Series).

Software for Fusion Reactor Design: ExCALIBUR Project NEPTUNE: Towards Exascale Plasma Edge Simulations

Threlfall, E. J., Akers, R. J., Arter, W., Barnes, M., Barton, M., Cantwell, C., Challenor, P., Cook, J. W. S., Coveney, P. V., Dodwell, T., Dudson, B. D., Farrell, P. E., Goffrey, T., Green, M., Guillas, S., Hardman, M., Hill, P. A., Kimpton, L., MacMackin, C. & McMillan, B. & 14 others, Moxey, D., Mudalige, G. R., Omotani, J. T., Parker, J. T., Parra Diaz, F., Parry, O., Rees, T., Ridgers, C. P., Saunders, W., Sherwin, S. J., Thorne, S., Williams, J., Wright, S. A. & Yang, Y., 21 Oct 2023, *29th IAEA Fusion Energy Conference, proceedings*. 7 p.

An Investigation into the Performance and Portability of SYCL Compiler Implementations

Shilpage, W. R. & Wright, S. A., 25 Aug 2023, *High Performance Computing - ISC High Performance 2023 International Workshops, Revised Selected Papers*. Bienz, A., Weiland, M., Baboulin, M. & Kruse, C. (eds.). Springer Science and Business Media Deutschland GmbH, p. 605-619 15 p. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 13999 LNCS).

Message from the Workshop Chairs

Wright, S. A., Hammond, S. D. & Jarvis, S. A., 18 Nov 2022, *2022 IEEE/ACM International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS)*. IEEE, p. vi-vii 2 p.

Special Issue on Performance Modeling, Benchmarking, and Simulation of High Performance Computing Systems

Wright, S. A., 15 Jul 2022, (E-pub ahead of print) In: *Concurrency and Computation: Practice and Experience*. 3 p.

Approaches to Performance Portability for Fusion Applications

Wright, S. A., Dudson, B. D., Hill, P. A., Dickinson, D., Higgins, E., Mudalige, G. R., McMillan, B. & Goffrey, T., 11 Jul 2022

StressBench: A Configurable Full System Network and I/O Benchmark Framework

Chester, D., Groves, T., Hammond, S. D., Law, T. R., Wright, S. A., Smedley-Stevenson, R., Fahmy, S. A., Mudalige, G. R. & Jarvis, S., 22 Sept 2021. 8 p.

EMPIRE-PIC: A Performance Portable Unstructured Particle-in-Cell Code

Bettencourt, M. T., Brown, D. A. S., Cartwright, K. L., Cyr, E. C., Glusa, C. A., Lin, P. T., Moore, S. G., McGregor, D. A. O., Pawlowski, R., Phillips, E. G., Roberts, N. V., Wright, S. A., Maheswaran, S., Jones, J. P. & Jarvis, S., Aug 2021, In: *Communications in Computational Physics*. 30, 4, p. 1232-1268

Higher-Order Particle Representation for Particle-in-Cell Simulations

Brown, D., Bettencourt, M. T., Wright, S. A., Maheswaran, S., Jones, J. P. & Jarvis, S., 8 Mar 2021, (E-pub ahead of print) In: *Journal of Computational Physics*. 435, 22 p.

Message from the Workshop Chairs

Wright, S. A., Hammond, S. D. & Jarvis, S. A., 2021, In: *Proceedings of PMBS 2021: Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems, Held in conjunction with SC 2021: The International Conference for High Performance Computing, Networking, Storage and Analysis*. p. vi-vii

Message from the Workshop Chairs

Wright, S. A., Hammond, S. D. & Jarvis, S. A., Nov 2020, In: *Proceedings of PMBS 2020: Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems, Held in conjunction with SC 2020: The International Conference for High Performance Computing, Networking, Storage and Analysis*. p. Vi-VII 9307850.

Warwick Data Store: A Data Structure Abstraction Library

Kirk, R. O., Nolten, M., Kevis, R., Law, T. R., Maheswaran, S., Wright, S. A., Powell, S., Mudalige, G. R. & Jarvis, S. A., Nov 2020, *Proceedings of PMBS 2020: Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems, Held in conjunction with SC 2020: The International Conference for High Performance Computing, Networking, Storage and Analysis*. IEEE, p. 71-85 15 p. 9307883. (Proceedings of PMBS 2020: Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems, Held in conjunction with SC 2020: The International Conference for High Performance Computing, Networking, Storage and Analysis).

An Unstructured CFD Mini-Application for the Performance Prediction of a Production CFD Code

Owenson, A., Wright, S. A., Bunt, R., Ho, Y., Street, M. & Jarvis, S., 25 May 2020, In: *Concurrency and Computation: Practice and Experience*. 32, 10, 14 p., e5443.

Message from the Workshop Chairs

Wright, S. A., Jarvis, S. A. & Hammond, S. D., Nov 2019, In: *Proceedings of PMBS 2019: Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems - Held in conjunction with SC 2019: The International Conference for High Performance Computing, Networking, Storage and Analysis*. p. v-vi 9059259.

Full-System Modeling and Simulation: Contributions Towards Coupling Contention and I/O

Chester, D., Wright, S. A., Hammond, S. D., Law, T. R., Smedley-Stevenson, R., Maheswaran, S. & Jarvis, S. A., 15 Aug 2019.

The Power-Optimised Software Envelope

Roberts, S. I., Wright, S. A., Fahmy, S. A. & Jarvis, S. A., 1 Jun 2019, In: *ACM Transactions on Architecture and Code Optimization*. 16, 3, 27 p., 21.

An Algorithm for Computing Short-Range Forces in Molecular Dynamics Simulations with Non-Uniform Particle Densities

Law, T. R., Hancox, J., Wright, S. A. & Jarvis, S., 28 Mar 2019, (E-pub ahead of print) In: *Journal of Parallel and Distributed Computing*. 130, p. 1-11 11 p.

Pointers inside lambda closure objects in OpenMP target offload regions

Truby, D., Bertolli, C., Wright, S. A., Bercea, G.-T., O'Brien, K. & Jarvis, S., 11 Feb 2019, *Proceedings of LLVM-HPC 2018: 5th Workshop on the LLVM Compiler Infrastructure in HPC, Held in conjunction with SC 2018: The International Conference for High Performance Computing, Networking, Storage and Analysis*. IEEE, p. 10-17 8 p. 8639410. (Technical Consortium on High Performance Computing).

Performance Modeling, Benchmarking and Simulation of High Performance Computing Systems

Wright, S. A., 10 Dec 2018, (E-pub ahead of print) In: *Future generation computer systems*. 92, p. 900-902 3 p.

BookLeaf: An Unstructured Hydrodynamics Mini-application

Truby, D., Wright, S. A., Kevis, R., Maheswaran, S., Herdman, A. & Jarvis, S. A., 10 Sept 2018. 8 p.

Developing and Using a Geometric Multigrid, Unstructured Grid Mini-Application to Assess Many-Core Architectures
Owenson, A., Wright, S., Bunt, R., Jarvis, S., Ho, Y. & Street, M., 6 Jun 2018, *Proceedings - 26th Euromicro International Conference on Parallel, Distributed, and Network-Based Processing, PDP 2018*. IEEE, p. 68-76 9 p.

Implicit mapping of pointers inside C++ Lambda closure objects in OpenMP target offload regions
Truby, D. R., Bertolli, C., Wright, S. A., Bercea, G.-T., O'Brien, K. & Jarvis, S. A., 1 Feb 2018, (Accepted/In press).

Performance of a second order electrostatic particle-in-cell algorithm on modern many-core architectures
Brown, D., Wright, S. A. & Jarvis, S. A., 20 Nov 2017, *UK Performance Engineering Workshop (UKPEW'17)*.

Performance of second order particle-in-cell methods on modern many-core architectures
Brown, D., Bettencourt, M. T., Wright, S. A., Jones, J. P. & Jarvis, S. A., 1 Oct 2017, (Accepted/In press).

Achieving performance portability for a heat conduction solver mini-application on modern multi-core systems
Kirk, R. O., Mudalige, G. R., Reguly, I. Z., Wright, S. A., Martineau, M. J. & Jarvis, S. A., 26 Sept 2017, *Proceedings - 2017 IEEE International Conference on Cluster Computing, CLUSTER 2017*. IEEE, Vol. 2017-September. p. 834-841 8 p. 8049026

Metrics for energy-aware software optimisation
Roberts, S. I., Wright, S. A., Fahmy, S. A. & Jarvis, S. A., 12 May 2017, (E-pub ahead of print) *High Performance Computing - 32nd International Conference, ISC High Performance 2017, Proceedings*. Springer, Vol. 10266 LNCS. p. 413-430 18 p. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 10266 LNCS).

7th international workshop on performance modeling, benchmarking and simulation of high performance computing systems (PMBS 2016)
Jarvis, S. A., Wright, S. A. & Hammond, S. D., 2 Feb 2017, In: *Proceedings of PMBS 2016: 7th International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computing Systems - Held in conjunction with SC 2016: The International Conference for High Performance Computing, Networking, Storage and Analysis*. p. v-vi 7836407.

Replicating HPC I/O workloads with proxy applications
Dickson, J., Wright, S., Maheswaran, S., Herdman, A., Miller, M. C. & Jarvis, S. A., 2 Feb 2017, *Proceedings of PDSW-DISCS 2016: 1st Joint International Workshop on Parallel Data Storage and Data Intensive Scalable Computing Systems - Held in conjunction with SC16: The International Conference for High Performance Computing, Networking, Storage and Analysis*. IEEE, p. 13-18 6 p. 7836562

Predictive Evaluation of Partitioning Algorithms through Runtime Modelling
Bunt, R. A., Wright, S. A., Jarvis, S. A., Ho, Y. K. & Street, M. J., 1 Feb 2017, *Proceedings - 23rd IEEE International Conference on High Performance Computing, HiPC 2016*. IEEE, p. 351-361 11 p. 7839701. (IEEE International Conference on High Performance Computing).

Optimisation of a Molecular Dynamics Simulation of Chromosome Condensation
Law, T. R., Hancox, J., Cheng, T. M. K., Chaleil, R. A. G., Wright, S. A., Bates, P. A. & Jarvis, S. A., 16 Dec 2016, *Proceedings - 28th IEEE International Symposium on Computer Architecture and High Performance Computing, SBAC-PAD 2016*. IEEE Computer Society, p. 126-133 8 p. 7789332

POSE: A mathematical and visual modelling tool to guide energy aware code optimisation
Roberts, S., Wright, S., Lecomber, D., January, C., Byrd, J., Oro, X. & Jarvis, S. A., 26 Jan 2016, *2015 6th International Green and Sustainable Computing Conference*. IEEE, 7393705

Quantifying the Effects of Contention on Parallel File Systems
Wright, S. A. & Jarvis, S. A., 29 Sept 2015, *Proceedings - 2015 IEEE 29th International Parallel and Distributed Processing Symposium Workshops, IPDPSW 2015*. IEEE, p. 932-940 9 p. 7284412

High performance computing systems: Performance modeling, benchmarking, and simulation: 5th international workshop, PMBS 2014 New Orleans, LA, USA, november 16, 2014 revised selected papers

Jarvis, S. A., Wright, S. A. & Hammond, S. D., 1 Jan 2015, *High Performance Computing Systems: Performance Modeling, Benchmarking, and Simulation - 5th International Workshop, PMBS 2014, Revised Selected Papers*. Springer, Vol. 8966. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 8966).

Monitoring, analysis and optimisation of I/O in parallel applications

Wright, S. A., 1 Nov 2014

High Performance Computing Systems: Performance Modeling, Benchmarking and Simulation: 4th International Workshop, PMBS 2013 Denver, CO, USA, November 18, 2013 Revised Selected Papers

Jarvis, S. A., Wright, S. & Hammond, S., 1 Jan 2014, *High Performance Computing Systems: Performance Modeling, Benchmarking and Simulation - 4th International Workshop, PMBS 2013, Revised Selected Papers*. Springer, Vol. 8551. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 8551).

Performance modelling of magnetohydrodynamics codes

Bird, R. F., Wright, S. A., Beckingsale, D. A. & Jarvis, S. A., 1 Mar 2013, *Computer Performance Engineering - 9th European Workshop, EPEW 2012, Revised Selected Papers*. Vol. 7587 LNCS. p. 197-209 13 p. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 7587 LNCS).

Parallel file system analysis through application I/O Tracing

Wright, S. A., Hammond, S. D., Pennycook, S. J., Bird, R. F., Herdman, J. A., Miller, I., Vadgama, A., Bhalerao, A. & Jarvis, S. A., 1 Feb 2013, In: *Computer Journal*. 56, 2, p. 141-155 15 p.

An investigation of the performance portability of OpenCL

Pennycook, S. J., Hammond, S. D., Wright, S. A., Herdman, J. A., Miller, I. & Jarvis, S. A., 1 Jan 2013, In: *Journal of Parallel and Distributed Computing*. 73, 11, p. 1439-1450 12 p.

Towards the automated generation of hard disk models through physical geometry discovery

Wright, S. A., Pennycook, S. J. & Jarvis, S. A., 1 Dec 2012, *Proceedings - 2012 SC Companion: High Performance Computing, Networking Storage and Analysis, SCC 2012*. p. 437-445 9 p. 6495845

LDPLFS: Improving I/O performance without application modification

Wright, S. A., Hammond, S. D., Pennycook, S. J., Miller, I., Herdman, J. A. & Jarvis, S. A., 18 Oct 2012, *Proceedings of the 2012 IEEE 26th International Parallel and Distributed Processing Symposium Workshops, IPDPSW 2012*. p. 1352-1359 8 p. 6270802

On the acceleration of wavefront applications using distributed many-core architectures

Pennycook, S. J., Hammond, S. D., Mudalige, G. R., Wright, S. A. & Jarvis, S. A., 1 Feb 2012, In: *Computer Journal*. 55, 2, p. 138-153 16 p.

Light-weight parallel I/O analysis at scale

Wright, S. A., Hammond, S. D., Pennycook, S. J. & Jarvis, S. A., 1 Dec 2011, *Computer Performance Engineering - 8th European Performance Engineering Workshop, EPEW 2011, Proceedings*. Vol. 6977 LNCS. p. 235-249 15 p. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 6977 LNCS).

Activities

Early Experiences with SYCL on Intel FPGAs: Porting a Heat Diffusion Mini-Application

Storkey, Z. (Speaker), Wright, S. A. (Speaker) & Gray, I. (Speaker)
18 Dec 2024

Exploring the Performance, Portability, and Productivity of Approaches to Developing Scientific Computing Applications

Smith, M. (Speaker) & Wright, S. A. (Speaker)

18 Dec 2024

15th International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems

Wright, S. A. (Chair), Hunold, S. (Chair) & Hammond, S. D. (Advisor)

18 Nov 2024

Project NEPTUNE: Developing Performance Portable Plasma Edge Simulations

Wright, S. A. (Invited speaker)

11 Jul 2024

FM-WP4 Software Support Procurement

Wright, S. A. (Speaker)

6 Mar 2024

14th International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems

Wright, S. A. (Chair), Hammond, S. D. (Chair) & Jarvis, S. (Chair)

13 Nov 2023

Approaches to Developing Performance Portable Scientific Software

Wright, S. A. (Invited speaker)

11 Oct 2023

Exploring the Portability of Parallel programming Models for Project NEPTUNE

Wright, S. A. (Speaker)

12 Dec 2022

13th IEEE International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems

Wright, S. A. (Chair)

14 Nov 2022

FM-WP4 Code Structure and Coordination

Wright, S. A. (Speaker)

5 Sept 2022

12th International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems, PMBS 2021

Wright, S. A. (Chair)

15 Nov 2021

The 11th IEEE International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems

Wright, S. A. (Chair)

12 Nov 2020

The 10th IEEE International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems

Wright, S. A. (Chair)

18 Nov 2019

The 9th IEEE International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems
Wright, S. A. (Chair)
12 Nov 2018

Awards

EPOC++ a future-proofed kinetic simulation code for plasma physics at exascale
WRIGHT, S. A. (Principal investigator)
EPSRC: £228,071.20
1/10/22 → 30/09/25

Projects

EPOC++ a future-proofed kinetic simulation code for plasma physics at exascale
WRIGHT, S. A. (Principal investigator)
EPSRC
1/10/22 → 30/09/25

STEP Plasma modelling - Scrape off layer turbulence simulations
DUDSON, B. D. (Principal investigator) & WRIGHT, S. A. (Co-investigator)
10/06/19 → 31/03/24