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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

**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*. 6 p.

**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.

**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 waveform 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