Ronald D. Haynes

PhD (Applied and Computational Mathematics)

Full Professor, Department of Mathematics and Statistics
Memorial University of Newfoundland

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Profile

Professor of Mathematics with a two-decade record of research excellence, graduate training, and academic leadership at Memorial University of Newfoundland. Approximately $5 million in external research funding as principal or co-investigator, spanning NSERC, Mitacs, ACOA, CFI, and industry partners in the offshore oil and gas, ocean technology, and geophysical sectors. Supervisor of 7 post-doctoral fellows, 25 graduate students, and 18 undergraduate research students. Current President of the Canadian Applied and Industrial Mathematics Society (CAIMS/SCMAI). Experienced academic administrator (Acting Associate Dean of Graduate Studies; Chair of Scientific Computing Graduate Programs; MUN Senator, 2018-2024; Senate Executive Member, 2020-2024; Member, Senate Planning and Budget Committee). Recipient of the Memorial University President's Award for Outstanding Research (2018) and Faculty of Science Teaching Award (2019).

Local/Regional Administrative Experience

External

Member, Newfoundland and Labrador Computer Science and Computer Engineering Working Group *2019-2020*

Provincial working group convened by the Department of Advanced Education, Skills and Labour to provide strategic advice on the development of computationally proficient graduates from our post-secondary institutions in Newfoundland and Labrador.

Member, ACEnet Research Directorate *2012–2014*

ACEnet is a regional research computing consortium serving Atlantic Canada as part of Compute Canada. The Research Directorate provides strategic oversight of research computing infrastructure and services, including resource allocation, policy development, and engagement with the research community.

Senior University Administration

(Acting) Associate Dean of Graduate Studies *2023*

School of Graduate Studies, Memorial University of Newfoundland. Responsible for graduate policy, student funding decisions, and academic program governance across all faculties.

Chair, Scientific Computing Graduate Programs *2015–present*

Led the interdisciplinary MSc and Phd programs in Scientific Computing; developed curriculum, adjudicated admissions and awards, and managed cross-departmental faculty relationships.

Member, Memorial University Senate and Senate Executive *2019–2024*

Participated in the governance of academic policy, program approvals, and institutional strategy, setting the agenda for Senate meetings.

Member, Senate Planning and Budget Committee *2024–present*

University-level committee with oversight of academic planning and resource allocation.

Member, Faculty of Science Research Advisory Board *2023–present*

Large scale research strategy and planning for the Faculty of Science.

Search Committees and Strategic Review

- Member, Search Committee for Memorial University Provost and Vice-President (Academic), 2020–2021
- Member, Search Committee for Canada Research Chair in Marine Passenger Transportation Technology, Marine Institute
- Member, University Awards Advisory Committee, 2023–present
- Member, Memorial University Data Centre Task Force, 2018–2019
- Member, Review Committee, new MEng in Energy Systems Engineering, 2017
- Member, Review Committee, new MEng in Safety and Risk Engineering, 2017
- Member, Academic Program Review Committee, Interdisciplinary PhD Program, 2019

Grant Funding Adjudication

- NSERC Discovery Grant Reviewer 2025, 2024, 2022, 2021, 2019, 2017, 2014, 2013, 2009
- CFI-JELF-LOI Reviewer 2017, 2010
- Global Excellence Initiative, Universities Canada (Sloan Fellowship) 2020
- American Chemical Society Petroleum Research Fund Reviewer 2019

Graduate Funding Adjudication

Chair and member of national and university graduate scholarship committees, giving direct experience with competitive graduate funding at the highest level:

- Chair, Banting Postdoctoral Fellowship adjudication (NSERC, SSHRC, CIHR streams), July 2023
- Chair, NSERC Vanier CGS adjudication, October 2023
- Chair, NSERC CGS-D adjudication, October 2023
- Chair, CIHR CGS-D adjudication, October 2023
- Member, University NSERC Vanier Scholarship Committee, 2021
- Member, University NSERC Banting PDF Review Committee, 2018

National and International Leadership

Society Leadership

President, Canadian Applied and Industrial Mathematics Society (CAIMS/SCMAI) *2025–2027*

CAIMS/SCMAI is Canada's primary learned society for applied and industrial mathematics, with members across academia, industry, and government. The President represents the society nationally and internationally, sets strategic direction, and liaises with federal funding bodies including NSERC and Mitacs.

Member-at-Large, CAIMS/SCMAI Board of Directors *2013–2016*

Elected position on the governing board of CAIMS/SCMAI, contributing to strategic planning, policy development, and oversight of society activities.

Director (Atlantic), Canadian Mathematics Society (CMS) Board of Directors *2011–2014*

Elected position representing the Atlantic region on the CMS Board, contributing to governance and strategic initiatives of the national mathematical community.

Board and Committee Leadership

Member, Parallel-in-Time Methods International Steering Committee *2015–2018*

International committee overseeing the organization of the Parallel-in-Time Methods conference series, which brings together researchers in numerical analysis, scientific computing, and high-performance computing to advance the state of the art in parallel time integration methods. Responsibilities included conference planning, speaker selection, and community engagement.

Major Conference Leadership

Lead Local Organizer, 25th International Conference on Domain Decomposition Methods (DD25) *2017–2019*

Hosted at Memorial University of Newfoundland, July 2018. The DD conference is the premier international venue for the mathematical and computational field of domain decomposition methods, drawing participants from across Europe, North America, and Asia. Organized the full scientific programme, local logistics, and a dedicated industry session (Oil, Gas and Ocean Industry Session) bridging academia and industry.

Co-organizer, BIRS Workshop on Adaptive Methods for PDEs *2018*

Banff International Research Station; co-organized with W. Huang and C. Budd.

Co-organizer, BIRS Workshop on Parallel-in-Time Methods *2016*

Co-organizer, First Canadian Symposium in Numerical Analysis and Scientific Computing (CSNASC) *2013*

CAIMS/SCMAI Annual Meeting, Quebec City; co-organized with J. Urquiza, R. Spiteri, R. Russell.

Editorial Leadership

Co-Editor-in-Chief, *Mathematics in Science and Industry* *2023–present*

Official journal of CAIMS/SCMAI. Responsibilities include managing the peer review process, setting editorial policy, and representing the journal to the broader applied mathematics community.

Associate Editor, *Numerical Algorithms* *2023–present*

International journal publishing research on the design, analysis, and implementation of numerical algorithms. Responsibilities include managing peer review for assigned manuscripts and contributing to editorial policy discussions.

Associate Editor *Journal of Difference Equations* *2025–present*

One of the leading international journals in the field of difference equations, publishing research on theory,

numerical methods, and applications. Responsibilities include managing peer review for assigned manuscripts and contributing to editorial policy discussions.

Co-Editor ***Proc. of 25th International Domain Decomposition Methods (DD25)*** *2019*

Springer Lecture Notes in Computational Science and Engineering.

Industry Partnerships and Technology Transfer

Sustained engagement with industry partners in the offshore oil and gas, ocean technology, and geophysical sectors, including two of the largest single grants in the department's history. Research has led to direct improvements in computational methods used for reservoir optimization, geophysical inversion, and corrosion modelling.

Ongoing partnerships with Canadian Global Maritime Ltd., Angler Solutions, Environment Canada and others.

Selected Industry Partnerships

Global Maritime Ltd. — *Optimization of Fleet Operations* *2025–2027*

Optimal loading and Scheduling of Offshore Supply Vessels; funded by the Mitacs Business Strategy. Software implementation and deployment.

Angler Solutions. — *Optimization of Energy Systems* *2025–2027*

Optimal deployment and scheduling of multi-faceted energy systems. Software implementation and deployment.

Global Maritime Ltd. — *Optimization of Mooring Strategies* *2025–2027*

Optimal placement and deployment of anchoring for off-shore platforms and assets, funded by the Mitacs Business Strategy. Software implementation and deployment.

Exxon and the Hibernia Development Corporation — *Machine Learning and Optimization of Drilling Technologies* *2022–2025*

Developed and deployed machine learning and optimization algorithms for drilling operations, including software for the detection of drill bit damage.

Research Enterprise and Funding

Total external funding as PI or co-investigator: approximately $5 million. Funding spans NSERC Discovery Grants (five successive awards of increasing size, 2005–present), major industry partnerships, CFI infrastructure, Mitacs, ACOA, and AARMS collaborative research groups. The portfolio reflects sustained competitive success across fundamental mathematical research and applied industrial partnerships, including two of the largest single grants in the department's history.

Selected Major Grants

NSERC Discovery Grant — *Adaptive and parallel methods for PDEs on general surfaces* *2023–2028*

$230,000 (PI)

Mitacs Business Strategy Internship — *Optimization of Fleet Operations, Canadian Global Maritime Ltd.* *2026–2027*

$30,000 (Co-PI, with K. Pope (Engineering, Memorial) and A. Miranda (Global Maritime))

AARMS CRG in Data Assimilation and PDEs *2025–2027*

$106,000 (Co-PI, with S. MacLachlan)

Mitacs Business Strategy Internship — *Optimization of Mooring Strategies, Canadian Global Maritime Ltd.* *2023–2024*

$30,000 (Co-PI, with A. Miranda (Global Maritime))

NSERC Discovery Grant — *Analysis and Implementation of Parallel Solvers for PDE Based Mesh Generation and Coupled Systems* *2018–2023*

$205,000 (PI)

AARMS CRG, *Mathematical Foundations and Applications of Scientific Machine Learning* *2021-2023*

$100,000 (Co-PI with A. Bihlo (Memorial))

AARMS CRG, *Numerical Solution of Geophysical Inverse Problems* *2021-2023*

$75,000 (Co-PI with P. Lelievre (Mount Allison))

Mitacs Elevate Postdoctoral Fellowship *2018–2020*

$100,000 (Co-PI, with I. Zakharov, C-Core)

NL Offshore Oil and Gas Industry Recovery Assistance (OGIRA) Fund — *Drilling: A Data Analytics Approach to Energy and Safety Improvements* *2020*

$1,863,329 (Co-PI with L. James)

AARMS CRG in Numerical Analysis and Scientific Computing *2015–2017; 2013–2015*

$36,000; $24,000 (Co-PI, with S. MacLachlan)

ACOA Atlantic Innovation Fund *2012*

$867,500 (Co-PI with J.P. Whitehead, C. Hurich, C. Farquharson)

NSERC Discovery Grant — *Implementation and Analysis of Adaptive Algorithms for the Numerical Solution of PDEs* *2008–2013*

$75,000 (PI)

CFI–LOF/RDC Leverage — *GPU-based HPC for Geophysical Applications* *2012*

$158,992 (PI)

IRIF/RDC Research Grant — *Optimization problems in the development of energy technologies* *2010–2012*

$100,000 (PI)

NSERC Research Tools and Instruments Grant — computing equipment *2007*

$50,638 (Co-PI, with H. Chipman and R. Karsten (Acadia))

NSERC Discovery Grant *2005–2007*

$39,000 (PI)

Graduate Training and Mentorship

A sustained commitment to graduate education spanning twenty years, with trainees who have gone on to careers in Canadian and international academia, the oil and gas sector, ocean technology industry, and government.

Category	Details
Postdoctoral Fellows	7 supervised (2011–present), including Mitacs Elevate and AARMS-funded positions; co-supervised with colleagues in Earth Sciences, Engineering, and Physics
PhD Students	6 supervised or co-supervised (2010–present); interdisciplinary projects spanning oil reservoir optimization, geophysical modelling, and numerical analysis
MSc Students	19 supervised or co-supervised (2006–present); multiple School of Graduate Studies Fellows, NSERC CGS recipients, and prize winners
Undergraduate Research	18 Honours and NSERC USRA students (2005–present)
Research Assistants	12 (2006–present), including WISE and SWASP program participants

Selected Student Distinctions

- Dawei Wang (MSc): Fellow of the School of Graduate Studies; Hillier Memorial Scholarship
- Alexander Howse (MSc): Fellow of the School of Graduate Studies; NSERC CGS; Ontario Graduate Scholarship
- Abu Naser Sarker (MSc): Shaun Hillier Thesis Scholarship
- Oleksandr Abramov (MSc): Atreya-Haritha Scholarship; Fellow of the School of Graduate Studies
- Emmeline Williams (MSc): 1st place, interdisciplinary poster, MUN SEA Conference 2023
- Gerry Harris-Pink (MSc): 2nd place, interdisciplinary poster, MUN SEA Conference 2023

Teaching Mentorship

Mentored junior colleagues in teaching practice at Memorial University: Polina Zheglova (2012), Alexander Howse (2013), Yunhui He (2018).

Research and Scholarly Output

72 peer-reviewed publications; 5 under revision or submitted (as of 2025). Research published in leading journals including *SIAM Journal of Scientific Computing*, *Mathematics of Computation*, *SIAM Journal of Numerical Analysis*, *ACM Transactions on Mathematical Software*, *Technometrics*, *Computers and Chemical Engineering*, *Journal of Petroleum Science and Engineering*, and *Computational Geosciences*. Work spans foundational numerical analysis and direct industrial application.

2 invited plenary lectures at major international conferences (DD24, Svalbard 2017; Adaptivity Workshop, Bath 2016). **50+ invited talks** at international conferences and universities across North America, Europe, Asia, and the Middle East.

A complete list of publications and presentations appears in the Appendix.

Selected Representative Publications

- Haynes, R.D. and Kwok, F., Discrete analysis of Domain Decomposition Algorithms for Grid Generation via the Equidistribution Principle, *Mathematics of Computation*, Vol. 86, pp. 233–273, 2017.
- Christlieb, A., Haynes, R.D. and Ong, B., A Parallel Space-Time Algorithm, *SIAM J. Sci. Comput.*, Vol. 34, No. 5, 2012.
- Haynes, R.D., Ladd, K., and Ong, B.W., Algorithm 965: RIDC Methods: A Family of Parallel Time Integrators, *ACM Transactions on Mathematical Software*, Vol. 43, 2016.
- Humphries, T.D., Haynes, R.D., and James, L.A., Simultaneous and sequential approaches to joint optimization of well placement and control, *Computational Geosciences*, Vol. 18, 2014.
- Tang, H.S., Haynes, R.D., and Houzeaux, G., A Review of Domain Decomposition Methods for Simulation of Fluid Flows, *Archives of Computational Methods in Engineering*, Vol. 28, pp. 841–873, 2020.
- May, Ian C. T., Haynes, R.D., and Ruuth, Steven J., A closest point method library for PDEs on surfaces with parallel domain decomposition solvers and preconditioners, *Numerical Algorithms*, Vol. 93, pp. 615–637, 2023.

Honours and Recognition

- **Memorial University President's Award for Outstanding Research**, 2018
- Dean of Science Distinguished Teaching Award, Memorial University, 2019
- Memorial University Students' Union Excellence in Teaching Award, 2016
- NVIDIA Professor Partnership Program, 2011
- NSERC Postdoctoral Research Fellowship, University of Waterloo, 2003–2004
- NSERC Postgraduate Scholarship (PhD), Simon Fraser University, 1998
- NSERC Postgraduate Scholarship (MSc), Simon Fraser University, 1996
- Governor General of Canada Silver Medal (BSc, first in class), Memorial University, 1996
- University Mathematics Medal (BSc), Memorial University, 1996

University Service (Selected)

Memorial University

- Review, Seed, Bridge, and Interdisciplinary Fund Committee, 2020 (two cycles)
- Terra Nova Young Innovators' Award Adjudication Committee, 2021
- Search Committee, Computer Science Department Head, 2016
- Dean of Science Review Committee, 2013
- Senate Committee on Educational Technology, 2012–2015
- Senate Committee on Academic Appeals, 2010–2011
- Faculty of Science Graduate Studies Committee, 2015–present
- Chair, Promotion and Tenure Committee, 2015–2016, 2016–2017
- Department Strategic Plan Committee, 2012, 2019

Journal Peer Review (Selected)

SIAM J. Scientific Computing, *SIAM J. Numerical Analysis*, *SIAM J. Matrix Analysis and Applications*, *Mathematics of Computation*, *ACM Transactions on Mathematical Software*, *Journal of Computational Physics*, *IMA Journal of Numerical Analysis*, *Numerical Algorithms*, *Linear Algebra and its Applications*, *Applied Mathematics and Computation*, and others.

Education

PhD, Applied and Computational Mathematics *1998–2003*

Simon Fraser University. Thesis: *The numerical solution of differential equations: grid selection for boundary value problems and adaptive time integration strategies.*

MSc, Applied and Computational Mathematics *1996–1998*

Simon Fraser University.

BSc (Hons), Applied Mathematics — *First Class, Governor General's Medal* *1992–1996*

Memorial University of Newfoundland.

Teaching

Award-winning instructor (MUNSU teaching award and Faculty of Science Distinguished Teaching Award) at both the undergraduate and graduate level. At Memorial University, taught nine distinct courses including Calculus II (MATH 1001), Numerical Analysis (MATH 3132), Numerical Optimization (MATH 4133/6202), Numerical Methods for Time-Dependent PDEs (MATH 6201), and Scientific Programming (CMSC 6920). Previously taught at Acadia University (2004–2009).

Appendix: Complete Publication List

71 published; 6 under revision or submitted.

Published

[H1] Haynes, R.D., and Trummer, M.R. Preconditioning for a Class of Spectral Differentiation Matrices. *J. Sci. Comput.*, Vol. 24, No. 3, pp. 343–371, 2005.

[H2] Haynes, R.D., Kennedy, S.C. and Trummer, M.R., Persistently Positive Inverses of Perturbed M-Matrices, *Linear Algebra and Applications*, Vol. 422, 2007.

[H3] Turner, C., Haynes, R.D. A Numerical and Theoretical Study of Blow-up for a System of ODEs using the Sundman Transformation. *Atlantic Electronic Journal of Mathematics*, 2007.

[H4] Haynes, R.D., and Russell, R.D. A Schwarz Waveform Moving Mesh Method. *SIAM J. Sci. Comput.*, Vol. 29, No. 2, pp. 656–673, 2007.

[H5] Haynes, R.D., Huang, W., and Russell, R.D. A Moving Mesh Method for Time-dependent Problems based on Schwarz Waveform Relaxation, *Domain Decomposition Methods in Science and Engineering XVII*, Springer LNCSE, Vol. 60, 2008.

[H6] Dulong, B., Haynes, R.D., Robertson, M. Computation time for strain field effects in Bloch-wave simulations of TEM diffraction contrast images. *Ultramicroscopy*, Vol. 108, 2008.

[H7] Karsten, R., McMillan, J., Lickley, M., Haynes, R.D. Assessment of Tidal Current Energy for Minas Passage, Bay of Fundy. *Proc. IMechE Part A: J. Power and Energy*, Vol. 222, 2008.

[H8] McMillan, J., Lickley, M., Karsten, R., Haynes, R.D. Potential of Tidal Power and its Effects on the Bay of Fundy. *SIAM Undergraduate Research Online*, Vol. 1, 2008.

[H9] Kennedy, S. and Haynes, R.D. Inverse Positivity of Perturbed Tridiagonal M-Matrices. *Linear Algebra and its Applications*, Vol. 430, 2009.

[H10] Haynes, R.D. Recent Advances in Schwarz Waveform Moving Mesh Methods. *Domain Decomposition Methods XIX*, Springer LNCSE, Vol. 78, 2010.

[H11] Ranjan, P., Haynes, R.D. and Karsten, R. A Computationally Stable Approach to Gaussian Process Interpolation. *Technometrics*, Vol. 53, No. 4, 2011.

[H12] Haynes, R.D., Huang, J., and Huang, T-Z. Monotonicity of Perturbed Tridiagonal M-matrices. *SIAM Journal of Matrix Analysis and Applications*, Vol. 33, 2012.

[H13] Gander, M.J., Haynes, R.D. Domain Decomposition approaches for mesh generation via the Equidistribution Principle. *SIAM Journal of Numerical Analysis*, Vol. 50, 2012.

[H14] Christlieb, A., Haynes, R.D. and Ong, B. A Parallel Space-Time Algorithm. *SIAM J. Sci. Comput.*, Vol. 34, No. 5, 2012.

[H15] Humphries, T.D., Haynes, R.D., and James, L.A. Simultaneous Optimization of Well Placement and Control using a Hybrid Global-Local Strategy. *ECMOR XIII*, Biarritz, 2012.

[H16] Haynes, R.D., Huang, W., Zegeling, P.A. A Numerical Study of Blowup in the Harmonic Map Heat Flow using the MMPDE moving mesh method. *Numerical Mathematics: Theory, Methods and Applications*, Vol. 6, 2013.

[H17] Gander, M.J., Haynes, R.D. and Howse, A.M. Alternating and Linearized Alternating Schwarz Methods for Equidistributing Grids. *Domain Decomposition XX*, Springer LNCSE, Vol. 91, 2013.

[H18] Haynes, R.D. and Ong, B. MPI-OpenMP algorithms for the parallel space-time solution of time dependent PDEs. *Domain Decomposition XXI*, Springer LNCSE, Vol. 98, 2014.

[H19] Haynes, R.D. and Howse, A.J.M. Generating Equidistributed Meshes in 2D via Domain Decomposition. *Domain Decomposition XXI*, Springer LNCSE, Vol. 98, 2014.

[H20] Humphries, T.D., Haynes, R.D., and James, L.A. Simultaneous and sequential approaches to joint optimization of well placement and control. *Computational Geosciences*, Vol. 18, 2014.

[H21] Butler, A., Humphries, T.D., Ranjan, P. and Haynes, R.D. Efficient Optimization of the Likelihood Function in Gaussian Process Modelling. *Computational Statistics and Data Analysis*, Vol. 73, 2014.

[H22] Haynes, R.D. and Howse, A.J.M. Alternating Schwarz Methods for PDE-based mesh generation. *Int. J. Comput. Math.*, Vol. 92, 2015.

[H23] Bihlo A., Haynes R.D. A Stochastic Domain Decomposition Method for Time Dependent Mesh Generation. *Domain Decomposition XXII*, Springer LNCSE, Vol. 104, 2016.

[H24] Bihlo, A., and Haynes, R.D. Parallel Stochastic Methods for PDE grid generation. *Computers and Mathematics with Applications*, Vol. 68, 2014.

[H25–H26] Belliveau, P., Farquharson, C., and Haynes, R.D. ArjunAir: Updating and parallelizing an existing time domain electromagnetic inversion program. *SEG Technical Program Expanded Abstracts 2014*; *SEG International Exposition and 84th Annual Meeting*, 2014.

[H27] Haynes, R.D. and Humphries, T.D. Joint optimization of well placement and control for nonconventional well types. *Journal of Petroleum Science and Engineering*, Vol. 126, 2015.

[H28] Carosio, G., Humphries, T.D., Haynes, R.D. and Farquharson, C. A Closer Look At Differential Evolution For The Optimal Well Placement Problem. *GECCO '15*, ACM, 2015.

[H29] Bihlo, A., Haynes, R.D. and Walsh, E.J. Stochastic domain decomposition for time dependent adaptive mesh generation. *J. Math. Study*, Vol. 48, 2015.

[H30] Haynes, R.D. and Huang, W. Preface: Adaptive Moving Mesh Methods. *J. Math. Study*, Vol. 48, 2015.

[H31] Haynes, R.D. and Kwok, F. Discrete analysis of Domain Decomposition Algorithms for Grid Generation via the Equidistribution Principle. *Mathematics of Computation*, Vol. 86, 2017.

[H32] Haynes, R.D., Ladd, K., and Ong, B.W. Algorithm 965: RIDC Methods: A Family of Parallel Time Integrators. *ACM Transactions on Mathematical Software*, Vol. 43, 2016.

[H33] Wang, X., Feng, Q., and Haynes, R.D. Optimization of Well Placement and Production for Large-scale Mature Oil Fields. *Journal of Engineering Science and Technology Review*, 2015.

[H34] Haynes, R.D. and Wang, X. A Multilevel Coordinate Search Algorithm for Well Placement, Control and Joint Optimization. *Computers & Chemical Engineering*, Vol. 95, 2016.

[H35] Bihlo, A., Haynes, R.D., Farquharson, C., Loredo-Osti, J.C. Probabilistic Domain Decomposition for the Solution of the Two-Dimensional Magnetotelluric Problem. *Comput. Geosciences*, Vol. 21, 2017.

[H36] Hillier, S.H., Reid, G.D., Haynes, R.D., Robertson, Z., Robertson, M.D. On the Role of the Second-Order Derivative Term in the Calculation of Convergent Beam Electron Diffraction Patterns. *Ultramicroscopy*, Vol. 179, 2017.

[H37] Haynes, R.D. Domain decomposition approaches for PDE based mesh generation. *Domain Decomposition XXIV*, Springer LNCSE, Vol. 125, 2018.

[H38] Mohagheghian, E., Haynes, R.D., and James, L. Optimization of Hydrocarbon Water Alternating Gas (WAG) in the Norne Field. *Fuel*, Vol. 223, 2018.

[H39] Ahmed, F. and Haynes, R.D. Linearized Domain Decomposition Approaches for Nonlinear Boundary Value Problems. *Journal of Computational and Applied Mathematics*, Vol. 346, 2019.

[H40] Makled, E.A., Yadav, A., Dobre, O.A. and Haynes, R.D. Hierarchical Full-Duplex Underwater Acoustic Network: A NOMA Approach. *OCEANS 2018 MTS/IEEE Charleston*, 2018.

[H41] DiPietro, K., Haynes, R.D., Huang, W., Lindsay, A., and Yu, Y. Moving Mesh simulation of contact sets in two dimensional models of elastic-electrostatic deflection problems. *Journal of Computational Physics*, Vol. 375, 2018.

[H42] Wang, X., and Haynes, R.D. Well Control Optimization using Derivative-Free Algorithms and a Multiscale Approach. *Computers and Chemical Engineering*, Vol. 123, 2019.

[H43–H45] May, I., Haynes, R.D., Ruuth, S.; Donzelli, F., Gander, M.J., Haynes, R.D.; Haynes, R.D. and Mohammad, K. [Three contributions to *Domain Decomposition XXV*, Springer LNCSE, Vol. 138, 2020.]

[H46] Dehghani-Sanij, A.R., MacLachlan, S., Naterer, G.F., Muzychka, Y.S., Haynes, R.D., Enjilela, V. Multistage Cooling and Freezing of a Saline Spherical Water Droplet. *International Journal of Thermal Sciences*, Vol. 147, 2020.

[H47] Tang, H.S., Haynes, R.D., and Houzeaux, G. A Review of Domain Decomposition Methods for Simulation of Fluid Flows. *Archives of Computational Methods in Engineering*, Vol. 28, pp. 841–873, 2020.

[H48] Jahandari, H., MacLachlan, S., Haynes, R.D., and Madden, N. Finite element modelling of geophysical electromagnetic data with goal-oriented hr-adaptivity. *Computational Geosciences*, Vol. 24, 2020.

[H49] May, I., Haynes, R.D. and Ruuth, S. Schwarz solvers and preconditioners for the closest point method. *SIAM Journal on Scientific Computing*, Vol. 42, 2020.

[H50] Derijani, H., Haynes, R.D., James, L.A. Well placement optimization based on pressure gradient distribution. *1st Geoscience and Engineering in Energy Transition Conference*, 2020.

[H51] Cai, X.-C., Halpern, L., Haynes, R.D., Maclachlan, S., Widlund, O. Preface, *Springer LNCSE*, Vol. 138, 2020.

[H52] Prasad, S., Zakharov, I., Haynes, R.D. and Puestow, T. Estimation of sea ice parameters using an assimilated sea ice model with a variable drag formulation. *Ocean Modeling*, Vol. 158, 2021.

[H53] Haynes, R.D., Huang, W., Sulman, M. Domain Decomposition Parabolic Monge-Ampère Approach for Fast Generation of Adaptive Moving Meshes. *Computers and Mathematics with Applications*, Vol. 84, 2021.

[H54–H55] Derijani, H., James, L.A., and Haynes, R.D. Evaluation of interFoam solver in the prediction of immiscible two phase flow. *Society of Core Analysts SCA 2021*; *E3S Web of Conferences*, Vol. 366, 2023.

[H56] Kowsari, M., James, L.A., Haynes, R.D. The Effect of Relative Permeability Hysteresis on the Design of an Optimal WAG Process. *SPE Reservoir Evaluation & Engineering*, Vol. 25, 2022.

[H57–H58] Haynes, R.D., Ruuth, S., Yazdani, A.; Haynes, R.D., Mohammad, K. [Two contributions to *Domain Decomposition XXVI*, Springer LNCSE, 2022.]

[H59] May, I., Haynes, R.D., and Ruuth, S. A closest point method library for PDEs on surfaces with parallel domain decomposition solvers and preconditioners. *Numerical Algorithms*, Vol. 93, 2023.

[H60] Ali, A., Singh, H., Kelly, D., Hender, D., Clarke, A., Ghiasi, M.M., Haynes, R.D., James, L. Automatic Classification of PDC Cutter Damage Using Deep Learning. *SPE/IADC International Drilling Conference*, 2023.

[H61] Haynes, R.D. and Mohammad, K. Fully Discrete Schwarz Waveform Relaxation Analysis for the Heat Equation on a Finite Spatial Domain. *ESAIM: M2AN*, Vol. 57, 2023.

[H62] Haynes, R.D., Sarker, A., and Robertson, M. Moving Mesh Simulations of Pitting Corrosion. *AIMS Mathematics*, Vol. 9, 2024.

[H63] Mohagheghian, E., Hender, D.G., Said, M.M.E., Huque, M.M., Clarke, A., Haynes, R.D. and James, L. Data-driven prediction of drilling strength ahead of the bit. *Geoenergy Science and Engineering*, Vol. 243, 2024.

[H64] Never Stop Thinking About Our Students: Reading with Hogan and Sathy's *Inclusive Teaching*. *Transformative Dialogues: Teaching and Learning Journal*, 2023.

[H65] Yazdani, A., Haynes, R.D., and Ruuth, S. Optimized Schwarz Domain Decomposition Algorithms for the Closest Point Method on Closed Manifolds. *Numerical Algorithms*, 2024.

[H66] Derijani, H., Haynes, R.D., James, L. Development of Integrated Material Balance and Simple Well Model for Reservoir Production Prediction. *85th EAGE Annual Conference*, 2024.

[H67] Hasan, M.M.U., Abdulbaset, A., Shahidi, R., Haynes, R.D., James, L. Utilizing Computer Vision and Unsupervised Data Clustering for Oil Drill Bit Blade Identification. *85th EAGE Annual Conference*, 2024.

[H68] Gander, M.J., Haynes, R.D., and Kwok, F. Corrigendum: Domain Decomposition Approaches for Mesh Generation. *SIAM J. Numer. Anal.*, Vol. 63, 2025.

[H69] Sarker, A., Haynes, R.D., and Robertson, M. A moving mesh method for pitting corrosion of heterogeneous materials. *Computers & Mathematics with Applications*, Vol. 191, 2025.

[H70] Haynes, R.D. Schwarz methods for mixed-type problems. Accepted May 2025, Springer LNCSE.

[H71] Shayanfar, H., Miranda, A., Haynes, R.D., and Doyle, K. Automation and optimization of mooring line designs. *ASME OMAE2025*, Vancouver, 2025.

[H72] Haynes, R.D., Gander, M.J. Schwarz and Dirichlet-Neumann Waveform Relaxation for a Stefan Problem. Springer LNCSE, 2025.

Under Revision / Submitted

[H73] Bihlo, A., Donzelli, F., Farquharson, C., Gander, M.J., Haynes, R.D. Non-Overlapping Optimized Schwarz Methods for Magnetotelluric Approximations of Maxwell's Equations. Submitted to *ESAIM*, 2024.

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