Date Submitted: 2021-12-31 16:45:54
Confirmation Number: 1413802
Template: Full CV

Dr. William W <u>Hackborn</u>

Correspondence language: English
Sex: Male
Date of Birth: 11/27
Canadian Residency Status: Canadian Citizen
Country of Citizenship: Canada

Contact Information

The primary information is denoted by (*)

Address

<u>Home</u> (*)

Fountainview Condos
Unit 1, 4710 53 St
Camrose Alberta T4V 1Y7
Canada

Telephone

Mobile (*)   780-2000705

Email

Work (*)   hackborn@ualberta.ca

Website

Corporate   https://apps.ualberta.ca/directory/person/hackborn

Dr. William Hackborn

Language Skills

Language	Read	Write	Speak	Understand	Peer Review
English	Yes	Yes	Yes	Yes	Yes
French	Yes	Yes	No	Yes	Yes

Degrees

1980/9 - 1987/6	Doctorate, Ph D in Mathematics, Fluid Dynamics, University of Toronto Degree Status: Completed Thesis Title: Eddies in Stokes Flows Driven by Rotlets
	Supervisors: Dr. Kenneth B. Ranger, 1980/9 - 1986/8
	Research Disciplines: Applied Mathematics
	Areas of Research: Fluid Mechanics
1979/9 - 1981/2	Master's non-Thesis, M Sc in Mathematics, Applied Mathematics, University of Toronto Degree Status: Completed
	Supervisors: Dr. Kenneth B. Ranger, 1979/9 - 1980/9
	Research Disciplines: Applied Mathematics
	Areas of Research: Fluid Mechanics
1974/9 - 1978/5	Bachelor's Honours, Bachelor of Mathematics, Applied Mathematics, University of Waterloo Degree Status: Completed

Recognitions

2021/4	Betty Ostenrud Award, 2020-2021 University of Alberta Prize / Award An award established by the Augustana Students Association (ASA) to recognize the faculty member who during the academic year contributes the most time, energy, and talent to the life and furtherance of Augustana Campus, University of Alberta.

User Profile

Researcher Status: Researcher
Research Career Start Date: 1986/09/01
Engaged in Clinical Research?: No

Key Theory / Methodology: mathematical analysis and modelling

Research Specialization Keywords: fluid dynamics, history of science, projectile motion, dynamical systems, mathematical biology

Disciplines Trained In: Applied Mathematics

Research Disciplines: Applied Mathematics

Areas of Research: Fluid Mechanics, Mathematical Analysis, Differential Equation, Science and Knowledge, Network Analysis (Information)

Fields of Application: Culture, Population, Communication and Information Technologies

Employment

2021/7	Professor Emeritus of Mathematics and Computing Science University of Alberta Emeritus
2004/7 - 2021/6	Professor of Mathematics and Computing Science University of Alberta Professor Tenure Status: Tenure
2001/6 - 2004/6	Professor of Mathematics and Computing Science Mathematical Sciences, Augustana University College, Augustana University College Full-time, Professor Tenure Status: Tenure
1994/7 - 2003/6	Chairperson, Mathematical Sciences Mathematical Sciences, Augustana University College, Augustana University College
1990/6 - 2001/5	Associate Professor of Mathematics and Computing Science Mathematical Sciences, Augustana University College, Augustana University College Full-time, Associate Professor Tenure Status: Tenure, 1989/8 -
1998/1 - 1998/6	Sabbatical Visitor, University of Waterloo Applied Mathematics, University of Waterloo, University of Waterloo Full-time, Associate Professor
1997/9 - 1997/12	Sabbatical Visitor, Oxford University Centre for Mathematical Biology, University of Oxford, University of Oxford Full-time, Associate Professor
1990/7 - 1991/6	Visiting Scientist, Cornell University Center for Applied Mathematics, Cornell University, Cornell University Full-time, Associate Professor
1984/8 - 1990/5	Assistant Professor Natural Sciences, Augustana University College, Augustana University College Full-time, Assistant Professor Tenure Status: Tenure Track
1978/5 - 1979/8	Computer Programmer Head Office, Home Hardware Stores Limited Programming in COBOL

Affiliations

The primary affiliation is denoted by (*)

(*) 2021/7	Professor Emeritus of Mathematics and Computing Science, University of Alberta

Research Funding History

Completed [n=2]

2019/4 - 2019/6
Principal Applicant

Alberta Mathematics Dialogue (AMD) 2019, Grant, Workshop
Project Description: Alberta Mathematics Dialogue (AMD) 2019 Date: 5/2/2019 to
5/3/2019 Augustana Campus, University of Alberta Principal Organizer: William Hackborn

Funding Sources:

2021/4 - 2021/6
Alberta Innovates
Strategic Networking & Development
Total Funding - 4,500 (Canadian dollar) (Canadian dollar)
Funding Competitive?: Yes
Funding Reference Number: G2019000205

2019/4 - 2019/5
Pacific Institute for the Mathematical Sciences
Total Funding - 4,000 (Canadian dollar)
Portion of Funding Received - 0
Funding Renewable?: No
Funding Competitive?: Yes

2014/1 - 2014/7
Principal Applicant

Alberta Mathematics Dialogue (AMD) 2014, Grant, Workshop
Project Description: Alberta Mathematics Dialogue (AMD) 2014 Date: 5/1/2014 to
5/2/2014 Augustana Campus, University of Alberta Principal Organzer: William Hackborn

Funding Sources:

2014/1 - 2014/7
Alberta Innovates
Strategic Networking & Development
Total Funding - 4,000 (Canadian dollar)
Portion of Funding Received - 0
Funding Renewable?: No
Funding Competitive?: Yes
Funding Reference Number: G2013000463

2014/4 - 2014/5
Pacific Institute for the Mathematical Sciences
Total Funding - 5,000 (Canadian dollar)
Portion of Funding Received - 0
Funding Renewable?: No
Funding Competitive?: Yes

Mentoring Activities

2018/6 - 2018/9
Supervisor, MITACS internship, University of Alberta
Number of Mentorees: 1
Mentorees: Tetiana Reznychenko
I supervised an intern from Ukraine under the sponsorship of MITACS Globalink Research
Internship program. We worked on a research project titled "Going Viral: the Dynamics of
Belief Diffusion".

2018/5 - 2018/8	Supervisor, UARE internship, University of Alberta Number of Mentorees: 1 Mentorees: Yihang Zhang I supervised an intern from China under the sponsorship of the UARE (University of Alberta Research Experience) program. We worked on a research project titled "Going Viral: the Dynamics of Belief Diffusion".
2017/1 - 2017/4	Supervisor, Directed Study AUMAT 395, University of Alberta Number of Mentorees: 1 Mentorees: Cameron Raynor Supervised a student project involving an analysis of the social network of academics at the University of Alberta.
2016/1 - 2016/4	Supervisor, Directed Study AUMAT 495, University of Alberta Number of Mentorees: 1 Mentorees: Sean Davis I supervised a directed study in which the student, Sean Davis, studied numerical methods for solving ordinary and partial differential equations. This involved a project in which Sean applied these methods to a reaction-diffusion PDE modelling Turing-type morphogenesis on a two-dimensional domain, in which Sean did outstanding work. Sean went on to do graduate work in Computer Science at the University of Waterloo.
2013/1 - 2013/4	Supervisor, Directed Study AUMAT 495, University of Alberta Number of Mentorees: 2 Mentorees: Allysa Fraser Lisa Kuschminder Supervised a directed study of Partial Differential Equations for two students. One of these students did a project on inviscid fluid flow past a Joukowski aerofoil, while the other one did a project on a simple climate model with zonal averaging, polar ice feedback, and diffusive heat transfer.

Journal Review Activities

2016/2 - 2021/9	manuscript reviewer,The Physics Teacher,American Association of Physics Teachers Number of Works Reviewed / Refereed: 3
2021/3 - 2021/4	Manuscript Reviewer,American Journal of Physics Number of Works Reviewed / Refereed: 1
2020/3 - 2020/4	Manuscript Reviewer,International Journal of Mathematics & Mathematical Sciences Number of Works Reviewed / Refereed: 1
2013/4 - 2017/8	manuscript reviewer,Acta Mechanica,Springer Number of Works Reviewed / Refereed: 5
2000/1 - 2000/4	Manuscript Reviewer,Physics of Fluids Number of Works Reviewed / Refereed: 1
1995/1 - 1995/4	Manuscript Reviewer,Zeitschrift für Angewandte Mathematik und Physik,Birkhäuser Verlag Number of Works Reviewed / Refereed: 1
1990/1 - 1990/4	Manuscript Reviewer,Fluid Dynamics Review Number of Works Reviewed / Refereed: 1

Most Significant Contributions

2017/5	Euler's Discovery and Resolution of D'Alembert's Paradox Conference presentation at the Canadian Society for the History and Philosophy of Mathematics (CSHPM) Annual Meeting, and published in "Research in the History and Philosophy of Mathematics: the CSHPM 2017 Annual Meeting in Toronto, Ontario," pp. 43-57, Springer, 2018. My best work in the history of science/mathematics, and the most downloaded paper in this volume.
2008/11	Projectile Motion: Resistance is Fertile A significant and well-received paper in the American Mathematical Monthly, the most widely circulated mathematics journal in the world.
2002/12	Pattern formation in reaction-diffusion models with nonuniform domain growth Co-author of this highly cited article in the Bulletin of Mathematical Biology
1997/9	A theoretical and experimental study of mixing regions in a chaotic Stokes flow Research with an engineer and another mathematician at Lafayette College, Easton PA. It resulted in a well-cited paper in the Journal of Fluid Mechanics, the preeminent journal in this field.

Publications

Journal Articles

1. Hackborn, W. (2020). The Two Cultures of Mathematics. CMS Notes. 52(2): 15-16.
   First Listed Author
   Published, Canadian Mathematical Society,
   Refereed?: Yes, Open Access?: Yes
   Number of Contributors: 1

2. Hackborn, W; Reznychenko, T; Zhang, Y. (2019). Consensus Building by Committed Agents. CODEE Journal. 12(1)
   http://dx.doi.org/10.5642/codee.201912.01.02
   First Listed Author
   Published, Claremont Colleges Library, United States
   Refereed?: Yes, Open Access?: Yes
   Number of Contributors: 3
   Contribution Percentage: 81-90
   Description of Contribution Role: Tetiana Reznychenko and Yihang Zhang were my undergraduate research interns in the summer of 2018 when the research for this paper was done. Mr. Zhang did valuable computer programming, contributed some helpful ideas, and produced a few figures for the paper. Ms. Reznychenko did a few mathematical calculations (under my supervision/correction) and drew a few figures for the paper. I did almost all of the mathematical analysis for this paper in the summer of 2018, and I wrote all of it (due to my experience and the fact that English was not the first language of my interns), beginning in June 2018 up until early January 2019 when the final version of the paper was submitted and accepted. Description / Contribution Value: The CODEE Journal is a peer-reviewed, open-access publication, distributed by the Community of Ordinary Differential Equations Educators (CODEE) and published by the Claremont Colleges Library to promote the teaching and learning of ordinary differential equations. This paper is in CODEE's special issue on "Linking Differential Equations to Social Justice and Environmental Concerns".

   Funding Sources: Mathematics of Information Technology and Complex Systems (MITACS); University of Alberta International (UAI)

3. Hackborn, W. (2016). On motion in a resisting medium: a historical perspective. American Journal of Physics. 84(2): 127-134.
    http://dx.doi.org/http://dx.doi.org/10.1119/1.4935896
    First Listed Author
    Published, American Association of Physics Teachers & American Institute of Physics, United States
    Refereed?: Yes, Open Access?: Yes
    Number of Contributors: 1

Thesis/Dissertation

1. Separation in Interior Stokes Flows Driven by Rotlets. (1986). University of Toronto. Doctorate.
    Number of Pages: 230 Supervisor: K. B. Ranger

Newspaper Articles

1. First Listed Author. Hackborn, W; Raynor, C. (2020). Augustana's Place in the UAlberta Network. The Quad, University of Alberta's official faculty and staff blog. 19 November 2020(Consider This)
    Edmonton, Alberta, Canada
    Editors: Internal Communications, University of Alberta
    Contribution Percentage: 51-60
    Description of Contribution Role: C. Raynor was a student under my supervision at the time this research was started. I applied for permission from a research ethics board at the University of Alberta to conduct this study, in particular the survey of UAlberta faculty that produced the data studied. Both Cameron and I designed the survey itself, equally. Cameron did the majority of the R programming required to analyzse the data, and I supervised this significant programming effort. I did all of the writing on the article itself, and convinced the editors to publish it.

Conference Publications

1. Hackborn, William W. (2018). Euler's Discovery and Resolution of D'Alembert's Paradox. Research in History and Philosophy of Mathematics, Proceedings of the CSHPM/SCHPM. Annual Meeting of the Canadian Society for History and Philosophy of Mathematics, Toronto, Canada (43-57). Springer International Publishing AG, Switzerland
    http://dx.doi.org/https://doi.org/10.1007/978-3-319-90983-7_3
    Conference Date: 2017/5
    Paper
    First Listed Author
    Published
    Refereed?: Yes, Invited?: No
    Number of Contributors: 1
    Editors: M. Zack, D. Schlimm