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 INFORMATION [www.malcolmiwroberts.com](http://www.malcolmiwroberts.com)

EDUCATION PhD in Applied Mathematics, **University of Alberta**, 2011  
 MSc in Applied Mathematics, **University of Alberta**, 2006  
 BSc, Honors Applied Mathematics, **University of Alberta**, 2001

WORK HISTORY Postdoctoral Researcher, **IRMA**, Université de Strasbourg, France, since 2014.

- Implement a discontinuous Galerkin solver in **OpenCL** to numerically solve general hyperbolic conservation laws using CPUs, GPUs, and MICs.
- Publish articles in peer-reviewed journals and present at conferences.

Postdoctoral Researcher, **Laboratoire de M2P2**, Aix-Marseille University, France, 2012 to 2014.

- Design software for simulating magneto-hydrodynamic turbulence in a grid computing environment using spectral methods and penalisation.

Sessional Lecturer, **University of Alberta**, Canada, 2010.

- Lectured differential equations in a team-teaching environment.

Graduate Student, **University of Alberta**, Canada, 2003 to 2011.

- Develop a coherent research program in applied mathematics.
- Publish results in peer-reviewed journals and present at conferences.
- Run undergraduate math labs and help sessions.

English Teacher, Private Academy, South Korea, 2003 to 2004.

Undergraduate Researcher, **University of Alberta**, 1998 to 2000.

PEER-  
REVIEWED  
ARTICLES

*Adaptive Matrix Transpose Algorithms for Distributed Multicore Processors*, with John C. Bowman. Interdisciplinary Topics in Applied Mathematics, Modeling and Computational Science, Springer Proceedings in Mathematics & Statistics 117, 97-103 (2015).

*Self-organisation of helically forced MHD flows in confined cylindrical geometries*, with M. Leroy, J. Morales, W. Bos, and K. Schneider. Fluid Dynamics Research, (2014).

*Multithreaded Implicitly Dealiasing Pseudospectral Convolutions*, with John C. Bowman. Proceedings of the 20th Annual Conference of the CFD Society of Canada (2012)

*Pseudospectral Reduction of Incompressible Two-Dimensional Turbulence*, with John C. Bowman. Communications in Nonlinear Science and Numerical Simulation **17:5**, 2008-2013 (2012)

*Dealiased Convolutions for Pseudospectral Simulations*, with John C. Bowman. Proceedings of the 13th European Turbulence Conference (2011)

*Efficient Dealiased Convolutions without Padding*, with John C. Bowman. SIAM Journal on Scientific Computing, **33:1**, 386-406 (2011)

*Links between dissipation, intermittency, and helicity in the GOY model revisited*, with John C. Bowman, Charles R. Doering, Bruno Eckhardt, Jahanshah Davoudi, and Jörg Schumacher. Physica D **218**, 1-10 (2006)

#### OTHER PUBLICATIONS

*Notes for Differential Equations*, with S. Marion (2015)

FFTW++: *Fast Fourier Transform C++ Header Class for FFTW3*, with John C. Bowman. [fftwpp.sourceforge.net](http://fftwpp.sourceforge.net), (2010)

schnaps: *An OpenCL discontinuous Galerkin solver*, with P Helluy et al. [schnaps.gforge.inria.fr](http://schnaps.gforge.inria.fr), (2015)

#### VOLUNTEERING & COMMITTEES

Thousand Faces Performance Art Festival  
• President of the Board 2011 to 2013

PIMS Mathematical and Statistical Graduate Education Round table  
• Brought together faculty, students, and administration from seven universities, resulting in new policies and programs being implemented.

Canadian Young Researchers Conference in Mathematics and Statistics  
• Organizing Committee (2006, 2008, 2010)

Volunteer Mechanic/Instructor, Edmonton Bicycle Commuter's Association, 2009 to 2013, Collectif Vélos en Ville, 2012 to 2013

University of Alberta Mathematics and Statistics Grad Association  
• President 2005 to 2006, Treasurer 2006 to 2007

University of Alberta Math Fair and Math Outreach, 2004 to 2011

#### TECHNICAL SKILLS

Project management and public speaking.  
C++, C, OpenCL, Python, and FORTRAN, using OpenMP and MPI.  
Linux scripting, version control systems, grid computing environments.  
Data analysis and visualization: L<sup>A</sup>T<sub>E</sub>X, Asymptote, HDF, and Paraview.