

Contact Information	malcolm.i.w.roberts@gmail.com malcolmiwroberts.com	
Education	PhD Applied Mathematics, MSc Applied Mathematics BSc Honors Applied Mathematics	University of Alberta, 2011 University of Alberta, 2006 University of Alberta, 2001
Work History	Senior Member of the Technical Staff, AMD, since 2020. <ul style="list-style-type: none">• Technical lead for rocFFT.• Worked with a larger team included industry and academic partners. Simulation Scientist, Computer Modelling Group Ltd, 2016 to 2020. <ul style="list-style-type: none">• Working in a corporate environment on a petroleum reservoir simulator software project written in C# and C++.• Improved software performance, stability, and test quality. Postdoctoral Researcher, IRMA, Université de Strasbourg, France, 2014 to 2016. <ul style="list-style-type: none">• Implemented a discontinuous Galerkin solver in C and OpenCL that can use CPUs, GPUs, and MICs to simulate controlled nuclear fusion.• Increased software performance by an order of magnitude. Postdoctoral Researcher, M2P2, Aix-Marseille University, France, 2012 to 2014. <ul style="list-style-type: none">• Designed a Fortran simulator for simulating magneto-hydro turbulence.• Ported code to a grid computing environment with thousands of cores.	
Selected Projects	rocFFT , AMD <ul style="list-style-type: none">• High-performance open-source GPU FFT library from AMD.• Written in HIP and C++. Extensively tested and optimized.• Partnered with academic and government partners for exascale computing. CoFlow (www.cmgl.ca/coflow), Computer Modelling Group Ltd. <ul style="list-style-type: none">• High-performance Petroleum Reservoir Simulator• Improved multi-threaded linear solver performance by 10×. fftw++ (fftwpp.sf.net) <ul style="list-style-type: none">• Implemented implicitly dealiased convolutions: faster and less memory.• MPI/OpenMP implementation of FFTs and convolutions for grid computing.• 5 publications and several conference presentations. schnaps (schnaps.gforge.inria.fr) <ul style="list-style-type: none">• A discontinuous-Galerkin solver for general numerical simulations.• Written in C and OpenCL. Runs on CPUs, GPUs, and MICs.	
Skills	Collaboration and project management. Public speaking and scientific writing. Proficient in English and French. Expertise in mathematical modelling and high-performance computing. Knowledge of dynamical systems, numerical methods, and statistics. C++ , C , C# , HIP , OpenCL , CUDA , Python , and Fortran , using OpenMP and MPI . Linux, Windows, version control, grid computing environments. Data analysis and visualization: L^AT_EX , R , Asymptote , and Paraview .	