# CURRICULUM VITAE

**Prepared March 30, 2016**


## Benson K. Muite

## Professional Address:

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## Education:

| | | | |
|---|---|---|---|
| 2010 | DPhil | Mathematics | University of Oxford |
| 2003 | MSE | Mechanical Engineering | Princeton University |
| 2001 | BS | Mechanical Engineering, Economics | California Institute of Technology |

## Employment:

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| 2014- | Research Fellow<br>University of Tartu |
| 2013-2014 | Postdoctoral Fellow<br>King Abdullah University of Science and Technology |
| 2010-2012 | T.H. Hildebrandt Postdoctoral Assistant Professor<br>University of Michigan |
| 2010 | Lecturer<br>University of Michigan |
| 2008–2009 | Six hour Non-Stipendiary College Lecturer in Mathematics<br>Lady Margaret Hall, University of Oxford |
| 2009 | Numerical Software Developer<br>Numerical Algorithms Group |
| 2005–2008 | Teaching Assistant<br>University of Oxford |

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| 2003 | Teaching Assistant<br>Princeton University |
| 2001–2003 | Research Assistant<br>Princeton University |
| 1999–2001 | Research Assistant<br>California Institute of Technology. |

## Honors:

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| 2004 | Ford foundation research fellow<br>African Institute for Mathematical Sciences |
| 2001 | Francis Upton graduate fellow<br>Princeton University |
| 2001 | George W. Green Memorial award for undergraduate research<br>California Institute of Technology |
| 2001 | Caltech-Cambridge exchange scholar |
| 2000 | Toshi Kubota aeronautics summer undergraduate research fellow<br>California Institute of Technology |

## Publications:

1. C. Klein, B. Muite, K. Roidot "Numerical study of blow-up in the Davey-Stewartson system", Discrete and Continuous Dynamical Systems - Series B 18 (5) , pp. 1361-1387, (2013)

2. B. Cloutier, B.K. Muite, P. Rigge, "Performance of FORTRAN and C GPU Extensions for a Benchmark Suite of Fourier Pseudospectral Algorithms" Proc. Symposium on Application Accelerators in High Performance Computing (SAAHPC) pp. 145-148 (2012)

3. G. Chen, B. Cloutier, N. Li, B.K. Muite, P. Rigge and S. Balakrishnan, A. Souza, J. West, "Parallel Spectral Numerical Methods"

4. J.C. DiFranco, P.D. Miller, B.K. Muite, "On the modified nonlinear Schrödinger equation in the semiclassical limit: supersonic, subsonic and transonic behavior", Acta Mathematica Scientia **31*B***(6), 2343-2377, (2011).

5. B.K. Muite, "A numerical comparison of Chebyshev methods for solving fourth-order semilinear initial boundary value problems", Journal of Computational and Applied Mathematics **234**, 317-342, (2010)

6. B.K. Muite, "The secondary flow in a cylindrical container with a rotating end-wall at small but finite Reynolds number", Physics of Fluids **16**, 3614-3626, (2004)

7. B.K. Muite, S.F. Quinn, K. Kesava Rao, S. Sundaresan, "Silo quake and silo music: Granular flow induced vibration", Powder Technology **145**, 190-202, (2004)

8. B.K. Muite, M.L. Hunt, G.G. Joseph, "The effects of a counter-current interstitial flow on a discharging hourglass", Physics of Fluids **16**, 3415-3425, (2004)

## Selected Conference Publications:

1. S. Aseeri, O. Batrašev, M. Icardi, B.Leu, A. Liu, N. Li, B.K. Muite, E. Müller, B. Palen, M. Quell, H. Servat, P. Sheth, R. Speck, M. Van Moer, J. Vienne, "Solving the Klein-Gordon equation using Fourier spectral methods: A benchmark test for computer performance" in 23rd High Performance Computing Symposium (HPC 2015), held in Conjunction with 2015 Spring Simulation Multi-Conference, April 2015.

2. B.K. Muite, O.U. Salman, "Computations of geometrically linear and nonlinear Ginzburg-Landau models for martensitic pattern formation", European Symposium on Martensitic Transformations, Prague, Czech Republic, September 2009

3. R. de la Cruz, B.K. Muite, H. Servat, "Strong linear scaling for spectral simulations of time dependent semilinear partial differential equations on Marenostrum", World Congress on Computational Mechanics, Venice, Italy, July 2008

## Courses Taught

1. Scientific Computing, University of Tartu, 2015

2. Applications of Parallel Computing, (local instructor), University of Tartu, 2015

3. Basics of Scientific Computing Infrastructures, (co-instructor) 2015

4. Parallel Computing, University of Tartu, 2014

5. Applications of Parallel Computing, (local instructor), University of Tartu, 2014
6. Advanced Engineering Mathematics, University of Michigan, 2012
7. Applied Honors Calculus III, University of Michigan 2012, 2010
8. Introduction to Numerical Methods, University of Michigan 2011
9. Intermediate Differential Equations (Dynamical Systems), University of Michigan 2011
10. Applied Honors Calculus II, University of Michigan 2010
11. Calculus I, University of Nairobi 2003

## Research Supervised

1. Erich Erstu (masters): Fluid Morphing for 2D Animations, September 2013-June 2014
2. Brandon Cloutier (undergraduate): Numerical Investigations of Convection, September 2010 - July 2012 (Co-Advisor)
3. Paul Rigge (undergraduate): High Precision Numerical Computations and Parallel Computing, January 2011 - July 2012
4. Gong Chen (undergraduate): Dispersive Quantization in Partial Differential Equations, August 2011 (Co-Advisor)
5. Sudarshan Balakrishnan (undergraduate): Dispersive Quantization in Partial Differential Equations, September 2010 - September 2011
6. Benjamin Bertrand (undergraduate): A Deterministic Interpretation of Second Order Partial Differential Equations, June - August 2010
7. Shandon Quinn (undergraduate): Silo quake and silo music: Granular flow induced vibration, September 2002 - June 2003 (Co-Advisor)

## Student Presentations

1. Brandon Cloutier, 2nd International Workshop on High-Order CFD Methods, Köln, Germany, May 2013 link
2. Albert Liu, Brian Leu, Parth Sheth, Supercomputing 12, Salt Lake City, November 2012 link
3. Brandon Cloutier, Paul Rigge, Symposium on Application Accelerators in High-Performance Computing, Chicago, July 2012 link
4. Brian Leu, Albert Liu, Parth Sheth, XSEDE 12, Chicago, July 2012 link
5. Brandon Cloutier, 2011 Division of Fluid Dynamics American Physical Society Conference, Baltimore, November 2011 link
6. Paul Rigge, SIAM Student Chapter Conference, IIT SIAM 2011 Conference on Recent Advances in Computational Science and Statistics, Chicago, October 2011 link
7. Brandon Cloutier, Paul Rigge, Teragrid 2011, Salt Lake City, Utah, July 2011 link

## Refereeing

Computer Physics Communications, SIAM Journal on Applied Mathematics,
SIAM Journal on Scientific Computing

## Visits of 1 month or more

Wolfgang Pauli Institute, Vienna, Austria, January 2013

University of Bourgogne, Dijon, France, May 2010

ONERA, Paris, France, March 2009

Barcelona Supercomputing Center, Barcelona, Spain, November 2008

University of Bonn, Bonn, Germany, July 2008

African Institute for the Mathematical Sciences, Muizenberg, South Africa, April 2004

## Travel Grants

ACM/IEEE Travel Grant to attend Education Program for Supercomputing 2011
(All conference costs)

American Mathematical Society Simons Foundation Travel Grant
$4,000

SIAM Travel Grant to attend ICIAM 2011
$1,500

## Teaching Development Grants

HITSA Tigriiülikool grant to develop parallel portable computer cluster €2,200

University of Michigan LSA Instructional Technology Development Grant
$4,000

Shodor Foundation Undergraduate Parallel Methods Teaching Materials Development Grant
$ 5,000 link

## Computer Skills:

C, Fortran, Linux, Mac OS, Maple, Mathematica, Matlab, MPI, OpenMP