

*Curriculum Vitae*  
BENJAMIN W. ONG

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## RESEARCH INTERESTS

High Performance Scientific Computing: Parallel-in-time, Domain Decomposition, Boundary-Integral Methods, Fast-Summation Treecodes, Moving Mesh Methods, Numerical Linear Algebra, Dimension Reduction

## EDUCATION AND TRAINING

Simon Fraser University, Mathematics, Ph.D. 2007  
Simon Fraser University, Mathematical Physics, B.Sc. 2000

## APPOINTMENTS

1/15 – present Assistant professor, Department of Mathematical Sciences  
Michigan Technological University  
1/14 – 12/14 Director of Research, Institute for Cyber Enabled Research  
Michigan State University  
8/11 –12/13 Research Specialist, Institute for Cyber Enabled Research  
Michigan State University  
8/10–8/11 Visiting Assistant Professor, Department of Mathematics  
Michigan State University  
8/07–8/10 Post Doctoral Fellow, Department of Mathematics  
Michigan State University

## PUBLICATIONS

1. F. Kwok and **B. Ong**, WRAP: Waveform Relaxation with Adaptive Pipelining, revision submitted
2. **B. Ong** and R. Spiteri, An overview of Deferred Correction methods for ODEs, revision submitted

3. **B. Ong** and B. Mandal, (2018) Pipeline Implementations of Neumann-Neumann and Dirichlet-Neumann Waveform Relaxation Methods, *Numerical Algorithms*, 78(1):1-10, doi:10.1007/s11075-017-0364-3 ([PDF](#))
4. **B. Ong**, A. Christlieb, and B. Quaipe, (2017) A new family of regularized kernels for the harmonic oscillator, *Journal of Scientific Computing*, 71:1212 doi:10.1007/s10915-016-0336-0, ([PDF](#))
5. A. Christlieb, Y. Cheng, W. Guo and **B. Ong**, (2017) An asymptotic preserving Maxwell Solver resulting in the Darwin Limit of Electrodynamics, *Journal of Scientific Computing*, 71:959 doi:10.1007/s10915-016-0328-0, ([PDF](#))
6. M. Iwen and **B. Ong**,(2016) A distributed and Incremental SVD algorithm for Agglomerative Data Analysis on Large Networks, *SIAM Matrix Analysis and Applications*, 37(4):1699–1718 ([PDF](#))
7. R. Haynes, K. Ladd and **B. Ong**, (2016) Algorithm 965: RIDC Methods - A Family of Parallel Time Integrators, *ACM TOMS*, 43(Aug):8:1–8:13 doi:10.1145/2964377 ([PDF](#))
8. S. High, F. Kwok and **B. Ong**, (2016) Pipeline Schwarz Waveform Relaxation, *Domain Decomposition Methods in Science and Engineering XXII*, *Lecture Notes in Computational Science and Engineering*, Springer-Verlag, 179-187, doi:10.1007/978-3-319-18827-0\_36 ([PDF](#))
9. A. Christlieb, C. Macdonald, **B. Ong** and R. Spiteri, (2015) Revisionist Integral Deferred Correction with Adaptive Error and Stepsize Control, *Comm. Math. Sci.*, 10(1):1–25, doi:10.2140/camcos.2015.10.1 ([PDF](#))
10. M. Causley, A. Christlieb, **B. Ong**, L. Van Groningen, (2014) Method of Lines Transpose: An implicit solution to the wave equation, *Mathematics of Computation*, 83:2763–2786, doi:10.1090/S0025-5718-2014-02834-2 ([PDF](#))
11. R. Haynes and **B. Ong**, (2013) MPI-OpenMP algorithms for the parallel space-time solution of Time Dependent PDEs, *Domain Decomposition Methods in Science and Engineering XXI*, *Lecture Notes in Computational Science and Engineering*, Springer-Verlag ([PDF](#))
12. **B. Ong**, R. Russell and S. Ruuth (2012), An h-r moving mesh method for one dimensional time dependent PDEs, *Proceedings of the 21st International Meshing Roundtable*, 39–54, doi://10.1007/978-3-642-33573-0\_3 ([PDF](#))
13. A. Christlieb, A. Melfi and **B. Ong** (2012), Parallel Semi-Implicit Time Integrators, arXiv:1209.4297v1, ([PDF](#))
14. A. Christlieb, R. Haynes and **B. Ong** (2012), A parallel space–time algorithm, *SIAM J. Sci. Comput*, 34(5):233–248, doi://10.1137/110843484 ([PDF](#))
15. A. Christlieb and **B. Ong** (2011), Parallel implicit time integrators, *J. Sci. Comput*, 49(2):167–179, doi:10.1007/s10915-010-9452-4, ([PDF](#))

16. A. Christlieb, M. Morton, **B. Ong** and J. Qiu (2011) Semi-implicit integral deferred correction using high order additive Runge–Kutta integrators, *Comm. Math. Sci.*, 9(3):879-902, ([PDF](#))
17. A. Christlieb, C. Macdonald, and **B. Ong** (2010), Parallel high-order integrators, *SIAM J. Sci. Comput.*, 32(2):818-835, doi:10.1137/09075740X, ([PDF](#))
18. J. Qiu, **B. Ong** and A. Christlieb (2010), Integral deferred correction methods constructed with high order Runge-Kutta Methods, *Math. Comp.*, 79:761-783, 2010, doi:10.1090/S0025-5718-09-02276-5, ([PDF](#))
19. A. Christlieb, **B. Ong** and J. Qiu (2009) Comments on high order integrators embedded within integral deferred correction methods, *Comm. Appl. Math and Comp. Sci.*, 4(1):27-56, ([PDF](#))
20. J. Barber, C. Bose, A. Bourlioux, J. Braun, E. Brunelle, T. Garcia, T. Hillen and **B. Ong** (2008) Burning issues with PROMETHEUS, the Canada’s wildfire growth simulator, *Canadian Applied Mathematics Quarterly*, 16(4):337-378, ([PDF](#))

## MENTORING

Undergraduates: A. Melfi (2010–2012); K. King (2010–2011); M. McQuiston (2011–2012); J. Fila (2012–2013); K. Ladd (2011–2014); K. Stankowski (2015); J. Prewett (2015); M. Herringa (2016); N. Judge (2017 – 2018); S. Dhamankar (2017 – present); A. Marcich (2017 – present)

Graduate: Dr. M. Morton (PhD, graduated 2011, co-advised with A. Christlieb); Dr. L. Van Groningen (PhD, graduated 2012, co-advised with A. Christlieb); S. High (Masters, graduated 2014); E. Novak (project, Summer 2015); A. Alazigg (project, Fall 2015); S. Judge (Project, Fall 2017); D. Thanawala (present) A. Azzam (present)

Post Doctoral Fellows: Dr. K. Wang (2013–2014); Dr. B. Mandal (2015–2016)

Thesis committee: B. Franklin (2015 – 2018); M. Roberts (2017 – present); F. Yosof (2018–present);