

**Andrew J. Christlieb**  
**Michigan State University**  
<http://www.the-christlieb-group.org>

**Professional Preparation**

Institution	Major/Area	Degree/Training
Univ. of Michigan-Dearborn	Mathematics	BS (1991 - 1996)
Univ. of Michigan-Dearborn	Electrical Engin.	BS (1991 - 1996)
Univ. of Michigan-Dearborn	Engin. Math	BS (1991 - 1996)
Univ. of Wisconsin-Madison	Applied Math	MS (1996 - 1998)
Univ. of Wisconsin-Madison	Mathematics	Ph.D. (1998 - 2001)
Univ. of Michigan-Ann Arbor	Aerospace Engin.	PostDoc (2001 - 2002)

**Appointments**

Date Start/End	Title	Institution
7/15 - present	University Foundational Professor Chair and Professor	Departments of Mathematics  Departments of Computational Mathematics, Science and Engineering Michigan State University
7/14 - 7/15	University Foundational Professor	Departments of Mathematics and Electrical and Computer Engineering Michigan State University
7/13 - 7/14	Assoc. Prof.	Departments of Mathematics and Electrical and Computer Engineering Michigan State University
7/10 - present	Assoc. Prof.	Department of Mathematics Michigan State University
5/06 - 9/10	Assis. Prof.	Department of Mathematics Michigan State University
9/02 - 5/06	Term Assis. Prof.	Department of Mathematics University of Michigan-Ann Arbor

**Leadership** Professor Christlieb is a leader in the field of numerical analysis, targeting key paradigm shifts such as leveraging multi-core computing platforms. His research group focusses on the development of advanced computing as a way of studying fundamental questions in physics and engineering. Professor Christlieb was a summer faculty fellow for the Edwards Air Force Base in 2006. He was the Air Force Office of Scientific Research Young investigator in 2007. Professor Christlieb was an IPA for Kirtland Air Force Base from 2008-2011, working closely with RDHE on the development of new algorithms to increase efficiencies and accuracy in the main parallel code for simulating high power microwave sources. In 2014 he was named MSU Foundational Professor of Mathematics. He has led a research group of 6-12 graduate students for the past 10 years, with between 2 to 4 post doctoral students embedded within his research team at anyone time. He has graduated 8 PhD students and 2 MS students, with his students having a mix of academic, industry and national lab jobs. He has 7 former post docs who have gone onto academic careers, with several of them receiving early career awards. He led a team of 17 MSU faculty who developed the proposal for the new department of Computational Mathematics, Science and Engineering (CMSE), took the proposal through the university committees, and is serving as the inaugural chair of CMSE. He has been deeply involved in hiring at all levels in CMSE.

### Five papers most closely related to the project

1. C. Shen, J. Qiu and A. Christlieb, “Adaptive mesh refinement based on high order finite difference WENO scheme for multi-scale simulations”, *J. of Computational Physics*, 230(10), 3780–3802, 2011
2. A.J. Christlieb, Y. Guclu, D. Seal, “High-order multiderivative time integrators for hyperbolic conservation laws”, *J. of Computational Physics*, 60 (1), 101–140, 2014
3. A.J. Christlieb, Y. Guclu, D. Seal, “The Picard integral formulation of weighted essentially non-oscillatory schemes”, *SIAM J. on Numerical Analysis*, 53(4), 1833–1856, 2015
4. A.J. Christlieb, Y. Liu, Q. Tang, Z. Xu, “Positivity-Preserving Finite Difference WENO Schemes with Constrained Transport for Ideal Magnetohydrodynamic Equations”, *SIAM J. on Scientific Computing*, 37(4), A1825–A1845, 2015
5. A.J. Christlieb, X. Feng, D.C. Seal, Q. Tang, “A high-order positivity-preserving single-stage single-step method for the ideal magnetohydrodynamic equations”, *J. of Computational Physics*, 316, 218–242

### Five other significant papers

1. A.J. Christlieb, B. Ong, J. Qiu, “Integral Deferred Correction Methods Constructed with High Order Runge-Kutta Methods”, *AMS–Mathematics of Computation*, 79, 761–783, 2010.
2. A.J. Christlieb, R. Haynes, B. Ong, “A Parallel Space-Time Algorithm”, *SIAM J. on Scientific Computing*, *SIAM J. on Scientific Computing*, 34(5):233–248, 2012
3. M. Causley, A.J. Christlieb, B. Ong, L. Van Groningen, “Method of Lines Transpose: An Implicit Solution to the One Dimensional Wave Equation”, *AMS – Mathematics of Computation*, 83, 2763–2786, 2014
4. M. Causley and A.J. Christlieb, “A-Stable Higher order schemes for the wave equation using a recursive convolution approach”, *SIAM J. on Numerical Analysis*, 52(1), 220–235, 2014
5. M. Bettencourt, M. Causley, A.J. Christlieb, E. Wolf, “A Particle-In-Cell Method for The Simulation of Plasmas Based on An Unconditionally Stable Field Solver”, *J. of Computational Physics*, 326, 342–372, 2016