

Geoffrey Martin
Associate Professor of Mathematics
University of Toledo
Toledo, OH 43606

Education

- B.S. in Physics, University of Connecticut at Storrs, 1977.
- M.S. in Physics, SUNY at Stony Brook, 1978.
- Ph.D. in Physics, SUNY at Stony Brook, 1983, Thesis advisor: Max Dresden, Dissertation Committee: Max Dresden, H. Blaine Lawson, Detlef Gromoll, John Smith.

Employment

- Visiting Assistant Professor, Department of Mathematics, University of Arizona, 1983-1984.
- Van Vleck Assistant Professor, Department of Mathematics, University of Wisconsin-Madison, 1984-1987.
- Visiting Assistant Professor, Department of Mathematics, University of California at Davis, 1987-1988.
- Post-doctoral Assistant, Department of Mathematics, North Dakota State University, 1988-1989
- Assistant Professor, Department of Mathematics, University of Toledo, 1989-1993.
- Associate Professor, Department of Mathematics, University of Toledo, 1993-present.

Publications

1. *Symplectic Geometry and the Inertial Principle*, Thesis, State University of New York at Stony Brook, 1983.
2. *Symplectic Geometry and the Inertial Principle*, Preprint, 1983.
3. *Inertial Geometry*, Preprint, 1984.
4. *A new geometric structure for relativity that bounds fields of force*, Preprint, 1986.
5. *Relation between charge and energy conservation in a nonlinear electrodynamics*, Int. J. Theor. Phys., 26, n.9, 1987, 873-888.
6. *Almost Complex Structures that Model Nonlinear Geometries*, J. Geometry Phy., 4, n.1, 1987, 21-38.
7. *Dynamical Structure for k-Vector Fields*, Int. J. Theor. Phys., 27, n. 5, 1988, 571-585.
8. *A Darboux Theorem of Multi-Symplectic Manifolds*, Lett. Math. Phys., 16, 1988, 133-138.
9. *Affine Geometry and the Lorentz Force Law*, Preprint, 1988.
10. *Fermi transport and Weylian electromagnetism*, J. Geometry Phy., 6, n.3, 1989, 395-405.
11. *Almost Hermitian geometries that characterize Hamilton-Jacobi distributions*, J. Phys. A: Math. Gen. 24, 1991, 3467-3482.
12. *Higher Causal Relations*, Preprint, 1991.
13. *Non-uniqueness of the Metric in Lorentzian Manifolds*, Pacific Journal of Mathematics, 158, 1993, 177-187.

14. *Geometric Structures Approximated by Maxwell's Equations*, Int. J. Theor. Phys., 32, n.6, 1993, 985-1004.
15. *Projective Derivatives And The Lorentz force law*, Preprint, 1994.
16. *A Geometric Structure for the Lorentz-Dirac Equation*, Proceedings of the 22nd Inter. Conf. on Geom. and Diff. Methods in Theor. Phys., 1994, 515-529.
17. *An overview of a geometric relativization of electrodynamics*, Preprint, 1995.
18. *Kinematic structure of topological singularities in an extended electrodynamics*, Preprint, 1995.
19. *Visualizing Nonlinear Electrodynamics*, With I. Sterling Proceedings of the VisMath 95 Conference, Springer-Verlag, Berlin, May 1995.
20. *On the image of the spinor square map*, Preprint, Spring 2000.
21. *Extensions of the Barut-Zhanghi model*, Preprint, Spring 2000.
22. *Inflation and Global Equivalence*, submitted to Foundations of Physics, Fall 2002.
23. *Stability and seal tolerances for cylindrical window motion*, Preprint, Fall 2001.
24. *Existence of Lagrangian Submanifolds in 8-dimensional Almost Symplectic Manifolds*, with Rongmei Cao, in preparation, Spring 2002.

Conference Presentations.

1. A geometric structure for the Lorentz-Dirac Equation, XXII International Conference of Differential Geometric Methods in Theoretical Physics, Ixtapa, Mexico, Sept. 1993.
2. Kinematic singularities in an extended electrodynamics, Eastern regional meeting of AMS, Hartford CT, March 1995.
3. Computational Aspects of Nonlinear Electrodynamics, Oberwolfach, October 1995. (with Ivan Sterling)
4. Symplectic connections and quasars, Midwest regional meeting of AMS, Detroit, May 1997. (with Ivan Sterling)
5. Symplectic connections and quasars, Midwest regional meeting of AMS, Milwaukee, October, 1997. (with Ivan Sterling)

Teaching

- Graduate Courses Taught: 1991-92 Algebraic Topology I II III, 1992-93 Methods of Mathematical Physics I II III, 1993-94 Real Analysis I II III, 1994-95 Topology I II III, 1996-97 Lie Groups, 1997-98 Algebraic Topology I II, 1998-99 Topics in Differential Geometry, 2001-2001 Ordinary and Partial Differential Equations.
- Doctoral Dissertations Directed: Bowen Wang, *The Geometric Structure of the Dynamical Equations*, December 1998. Rongmei Cao, *Lagrangian Submanifolds for Eight Dimensional Almost Symplectic Manifolds*, May 2002.

Grants and Honors

- UFRAF Summer Grant 1990.
- Dean's Merit Award 1996-1997.