

CURRICULUM VITAE

Name: Gregory L. Naber
Citizenship: U. S. A.
Date of Birth: September 21, 1948
Academic Training:

1. B. S. in Mathematics, Carnegie-Mellon University, 1970
2. M.S. in Mathematics, Carnegie-Mellon University, 1971
3. D.A. in Mathematics, Carnegie-Mellon University, 1974

Occupational Record:

1. Drexel University, Teaching Professor, 2004 – 2012
2. California State University (Chico), Professor, 1987 – 2003
3. Hong Kong Polytechnic, Visiting Professor, 1986 – 1987
4. California State University (Chico), Associate Professor, 1983 – 1987
5. St. Joseph's University, Associate Professor, 1981 – 1983
6. St. Joseph's University, Assistant Professor, 1980 – 1981
7. Penn State (Delaware County), Assistant Professor, 1975 – 1980
8. Penn State (DuBois), Assistant Professor, 1974 – 1975
9. Memphis State University, Instructor, 1973 – 1974

Publications:

1. **Set-Theoretic Topology, With Emphasis on Problems from the Theory of Coverings, Zero-Dimensionality and Cardinal Invariants**, University Microfilms International, Ann Arbor, Michigan, 1977.
2. **Topological Methods in Euclidean Spaces**, Cambridge University Press, Cambridge, England, 1980.
3. A review of the book **Differential Geometry and Relativity Theory**, by Richard L. Faber, American Journal of Physics, Vol. 54, No. 7, July, 1986.
4. **Spacetime and Singularities: An Introduction**, London Mathematical Society Student Texts #11, Cambridge University Press, Cambridge, England, 1988.
5. **The Geometry of Minkowski Spacetime: An Introduction to the Mathematics of the Special Theory of Relativity**, Applied Mathematical Sciences Series #92, Springer-Verlag, New York, Berlin, 1992.

6. **Topology, Geometry and Gauge Fields: Foundations**, Texts in Applied Mathematics #25, Springer-Verlag, New York, Berlin, 1997.
7. “Topology and Classical Gauge Theory”, in **Aspects of Complex Analysis, Differential Geometry, Mathematical Physics and Applications**, World Scientific, Singapore, 1999.
8. **Topology, Geometry and Gauge Fields: Interactions**, Applied Mathematical Sciences Series #141, Springer-Verlag, New York, Berlin, 2000.
9. **Geometry, Integrability and Quantization** (Co-Editor with Ivailo Mladenov), Coral Press Scientific Publishing, Sofia, Bulgaria, 2000.
10. **Topological Methods in Euclidean Spaces**, Dover Publications, Inc., Mineola, New York, 2000 (Dover Reprinting of #2).
11. **Geometry, Integrability and Quantization II** (Co-Editor with Ivailo Mladenov), Coral Press Scientific Publishing, Sofia, Bulgaria, 2001.
12. **Geometry, Integrability and Quantization III**, (Co-Editor with Ivailo Mladenov), Coral Press Scientific Publishing, Sofia, Bulgaria, 2002.
13. “Gauge Fields in Physics and Mathematics”, *Journal of Dynamical Systems and Geometric Theories*”, Vol. 1, No. 1, 2002, 19-34.
14. **The Geometry of Minkowski Spacetime: An Introduction to the Mathematics of the Special Theory of Relativity**, Dover Publications, Inc., Mineola, New York, 2003 (Dover Reprinting of #5).
15. “Topology, Geometry and Physics: Background for the Witten Conjecture I”, *Journal of Geometry and Symmetry in Physics*, Vol. 2, 2004, 27-123.
16. “Topology, Geometry and Physics: Background for the Witten Conjecture II”, *Journal of Geometry and Symmetry in Physics*, Vol. 3, 2005, 1-83.
17. **Encyclopedia of Mathematical Physics, Volumes 1-5**, (Co-Editor with Jean-Pierre Francoise and Tsou Sheung Tsun), Academic Press/Elsevier, Oxford, England, 2006.
18. “Minkowski Spacetime and Special Relativity”, in **Encyclopedia of Mathematical Physics**, Academic Press/Elsevier, 2006.

19. **Topology, Geometry and Gauge Fields: Foundations**, Second Edition, Texts in Applied Mathematics #25, Springer, New York, 2010.
20. **Topology, Geometry and Gauge Fields: Interactions**, Second Edition, Applied Mathematical Sciences Series #144, Springer, New York, 2011.
21. **The Geometry of Minkowski Spacetime: An Introduction to the Mathematics of the Special Theory of Relativity**, Second Edition, Applied Mathematical Sciences Series #92, Springer, New York, 2011.

Work in Progress:

I have just completed a manuscript entitled *Foundations of Quantum Mechanics: An Introduction of the Physical Background and Mathematical Structure*. This has been posted online for free download at <http://www.gregnaber.com/>. I am currently working on a sequel entitled *The Klein-Gordon Field: An Introduction to the Mathematics of Scalar Quantum Fields*.

Invited Conference Papers:

1. "The Ubiquitous Dirac Monopole," Special Session on Dynamical Systems and Mathematical Physics, AMS Western Sectional Meeting, Davis, CA, April 25-26, 1998.
2. "Topology and Classical Gauge Theory," Fourth International Workshop on Complex Structures and Vector Fields, St. Constantine, Bulgaria, September 3-11, 1998.
3. "Dirac and Seiberg-Witten Monopoles," International Conference on Clifford Algebras and Their Applications in Mathematical Physics, Ixtapa, Mexico, June 27-July 4, 1999. Also at "International Conference on Geometry, Integrability, and Quantization," St. Constantine, Bulgaria, September 1-10, 1999.
4. "Spheres and the Symmetry Groups of Physics," International Conference on Geometry, Integrability, and Quantization, St. Constantine, Bulgaria, September 1-10, 1999.
5. "The Witten Conjecture", 2nd International Conference on Geometry, Integrability, and Quantization, St. Constantine, Bulgaria, June 7-15, 2000.
6. "A Survey of Donaldson Theory", 2nd International Conference on Geometry, Integrability, and Quantization, St. Constantine, Bulgaria, June 7-15, 2000.
7. "Invariants of Smooth 4-Manifolds: Topology, Geometry, Physics," 3rd International Conference on Geometry, Integrability, and Quantization, St. Constantine, Bulgaria, June 14-23, 2001.

8. “Equivariant Localization and Stationary Phase”, 4th International Conference on Geometry, Integrability, and Quantization, St. Constantine, Bulgaria, June 6-15, 2002.

Invited Lecture Series:

1. Two week Short Course at the Feza Gürsey Institute in Istanbul, Turkey, June 25-July 6, 2001, on **Invariants of Smooth 4-Manifolds: Topology, Geometry and Physics**.
2. One week Short Course at the Institute of Theoretical Physics, Technical University, Budapest, Hungary, July 22-27, 2003, on **Topology, Geometry and Physics: Background for the Witten Conjecture**.
3. One week Short Course at the Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany, July 18-22, 2005, on **Donaldson and Seiberg-Witten Invariants: The Witten Conjecture**.
4. Series of nine 2-hour lectures at the Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany, June 22-August 18, 2006, on **Equivariant Localization**.
5. Short Course on **Supermanifolds** at the Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany, July 1-August 1, 2007.

Keynote Speaker: Black Hills Research Symposium, March 22, 2012

Invited Colloquium and Seminar Lectures:

1. Topology and Relativity
2. Singularity Theorems in General Relativity
3. A Topology for R^4 and its Physics
4. Fractional Linear and Lorentz Transformations
5. Hawking’s First Theorem
6. The Dirac Scissors Problem
7. The Spinor Map
8. The Hopf Bundle and Magnetic Monopoles
9. Magnetic Monopoles, Instantons and 4-Manifolds
10. Fiber Bundles in Mathematics and Physics
11. Differential Topology and Physics: The Witten Conjecture
12. Equivariant Cohomology, Euler Classes and TQFT
13. Localization and Stationary Phase Approximation
14. Invariant Subspaces for the Family of Operators that Commute with a Compact Operator
15. Reproducing Kernels and Group Representations

Editorial:

1. Editor (along with Tsou Sheung Tsun of Oxford and Jean-Pierre

Francoise of the Universite P.-M. Curie in Paris) of a five volume **Encyclopedia of Mathematical Physics**, published by Elsevier, Academic Press, May, 2006.

2. Editorial Board for the Journal of Dynamical Systems and Geometric Theories.
3. Associate Editor for the Journal of Geometry and Symmetry in Physics.
4. Standing Committee for the 16th International Conference on Geometry, Integrability and Quantization, Varna, Bulgaria, June, 2014.
5. Scientific Advisory Committee, International Conference on Mathematical Sciences, Bolu, Turkey, December 28-31, 2012.

Awards:

Drexel Graduate Student Association Award
2011 Faculty Mentor of the Year