Kenneth Morgan Golden

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Education

B.A.	1980	Dartmouth College, Mathematics and Physics
M.S.	1983	New York University, Mathematics
Ph.D.	1984	New York University, Mathematics

Employment

1984-87	NSF Mathematical Sciences Postdoctoral Fellow, Rutgers University
1987-91	Assistant Professor of Mathematics, Princeton University
1991-96	Associate Professor of Mathematics, University of Utah
1996-	Professor of Mathematics, University of Utah
2007-	Adjunct Professor of Bioengineering, University of Utah

Professional Summary

- Visiting positions held at Institut des Hautes Etudes Scientifiques, Stanford, U. Roma 1, U. Napoli, Moscow Civil Engineering Institute, U. Provence Aix-Marseille 1, U. Saõ Paulo, Hong Kong U. of Science and Technology, and U. Paris Nord.
- Member of scientific expeditions studying Antarctic sea ice in 1980, 1994, 1998, 1999 and 2007; studied sea ice in the Arctic in 2000, 2001, 2002, 2003, 2004 and 2007; since 2003, 6 undergraduates have participated in six Arctic trips and one Antarctic voyage.
- Served as Modeling Coordinator, overseeing theoretical research, for ONR Accelerated Research Initiative on Sea Ice Electromagnetics 1992-98, involving over 60 researchers at 20 institutions.
- Served in the University of Utah Mathematics Department on Executive Committee ($1992-96, 2002-4$), Faculty Hiring Committees ($1991-93, 1999-2001$), as Director of Undergraduate Studies ($2002-$), as Research Experiences for Undergraduates (REU) Program Coordinator ($2003-$), and as Coordinator for Calculus classes ($2003-5$) and Engineering Math classes ($1996-1998$); Member, University of Utah Academic Senate ($2000-03$), Academic Senate Executive Committee ($2000-02$); Member, College of Science Dean's "Kitchen Cabinet" ($2007-$).
- 2007 University Distinguished Teaching Award, University of Utah; Excellence in Teaching Award, Princeton University, 1989
- Member, Electromagnetics Academy $1996-$; Faculty Fellow Award, University of Utah, 1994; Hertz Fellow, NYU, $1981-84$.
- Member, Editorial Board of *SIAM Journal on Applied Mathematics* 1996-99, Editorial Board of *Applicable Analysis* $2004-$; Member, American Mathematical Society (AMS), Society for Industrial and Applied Mathematics (SIAM), and American Geophysical Union (AGU).
- Served as reviewer for journals in mathematics, physics, engineering, and geophysics; Reviewed proposals for NSF and other agencies in US and abroad; Served on panels and site reviews for NSF.
- Presented my sea ice research and its connections to climate change in the US Congress on behalf of the American Mathematical Society in June 2003 (AMS Exhibitor at the Coalition for National Science Funding Exhibition and Reception) and November 2007 (see Lectures).

Research Interests: Composite materials; percolation theory; fluid, thermal, and electromagnetic transport in sea ice; diffusion processes; statistical mechanics of phase transitions; inverse problems.

Organizing Activities

Session on Composites and Inhomogeneous Media, AMS Meeting, Salt Lake City 4/93
Workshop on Modeling the Electromagnetic Properties of Sea Ice, Hanover, NH 1/94
Session on Percolation Problems, SIAM Materials Meeting, Pittsburgh 4/94
Workshop on Disordered Media and Percolation, Inst. Math. Appl. (IMA), Minneapolis 11/95
Workshop on Sea Ice Electromagnetics, Salt Lake City 1/96
Session on Inverse Problems for Composite Media, SIAM Materials Meeting, Phil. 5/97
Session on EM Inverse Problems, Fourth Intl. Congress on Industrial and Appl. Math., Edinburgh 7/99
Sixth Intl. Conf. on the Electrical Transport and Optical Properties of Inhomogeneous Materials (ETOPIM6), Snowbird, UT, 7/02; Co-Chair
Random Phenomena in Applied Mathematics, Conf. in Honor of G. Papanicolaou's 60th, Stanford, 1/03
Session on Electrorheological Fluids, Euro. (EMS) and French Math. Societies (SMAI - SMF), Nice, 2/03
International Organizing Committee for ETOPIM7, Sydney, 7/06.
International Organizing Committee for ETOPIM8, Crete, 6/09.

Research Grants

1988–90 NSF Grant DMS-8801673 (funded by NSF and AFOSR), Princeton University, "Macroscopic Properties of Random and Quasiperiodic Media," $42,000.

1990–92 AFOSR Grant AFOSR-90-0203, Princeton University, "Macroscopic Properties of Random and Quasiperiodic Media," $57,000.

1992–93 NSF Grant DMS-9204328 (funded by NSF and AFOSR), U. of Utah, "Mathematical Aspects of Materials Science," $35,000.

1992–97 ONR Grant N00014-93-10141, U. of Utah, "Mathematical and Experimental Studies of the Electromagnetic Properties of Sea Ice," PI: K. M. Golden, coPI: S. A. Johnson (Department of Bioengineering and Center for Inverse Problems, Imaging and Tomography), $379,000.

1993–96 NSF Grant DMS-9307324, U. of Utah, "Analysis and Optimization of the Effective Properties of Inhomogeneous Materials," PI: K. M. Golden, coPI: A. V. Cherkaev, $135,000.

1994–99 ONR Grant N00014-94-10958, Univ. of Utah, AASERT for graduate students, "Electromagnetic Behavior of Sea Ice Microstructure," PI: K. M. Golden, coPI: S. A. Johnson, $181,000.

1996–00 NSF Grant DMS-9622367, U. of Utah, "Percolation in Composite Materials," $72,000.

1997–01 ONR Grant N00014-93-10141, U. of Utah, "Electromagnetic and Acoustic Scattering in the Ocean Environment," PI: K. M. Golden, coPI: E. Cherkaev, $185,000.

1997–01 NSF Grant OPP-9725038, U. of Utah, "Percolation in Sea Ice," $290,000.

2000–02 NSF Grant DMS-0076129, U. of Utah, "Critical Phenomena in Composite Media," $35,000.

2002–03 NSF Grant DMS-0211211, U. of Utah, "Sixth International Conference on the Electrical Transport and Optical Properties of Inhomogeneous Media" PI: K. M. Golden, coPI's: S. Blair (Dept. of Electrical and Computer Eng.), G. W. Milton, C. Johnson (School of Computing), Z. V. Vardeny (Dept. of Physics), $37,000; Also funded by Army Research Off. for $10,000.

2002–06 NSF Grant DAS-0222171, U. of Utah and U. of Alaska, Collaborations in Mathematical Geosciences (CMG): "Microstructural Controls on Transport Processes in Geophysical Systems," PI: K. M. Golden, coPI: H. Eicken, U. of Alaska, Fairbanks, $670,000.

2002–06 REU Supplement to NSF Grant DAS-0222171, U. of Utah, $63,000.

2005–08 NSF Grant DMS-0537015, U. of Utah, "Analysis and Computation of Electromagnetic Transport in Composite Materials," PI: K. M. Golden, coPI: D. Dobson, $342,000.

2005–08 REU Supplement to NSF Grant DMS-0537015, U. of Utah, $61,000.

2006–07 NSF Grant DMS-0629032, U. of Utah, "Electrical Transport and Optical Properties of Inhomogeneous Media (ETOPIM) Conference Traveler Funding" PI: G. W. Milton, coPI's: K. M. Golden and Z. V. Vardeny (Dept. of Physics), $19,600.

2006–12 NSF Grant DMS-0602219, U. of Utah, "EMSW21-VIGRE: Vertical Integration in Mathematics at the University of Utah," PI: A. Bertram, coPI: D. Dobson, Senior Personnel: F. Adler, E. Cherkaev, K. M. Golden, N. Korevaar, G. Savin, K. Schmitt, and P. Trapa, $3,500,000.

Educational Activities

- Undergraduate Students: Eric Bair (Mathematics) $1992-94$; Troy Finlayson (Physics) $2001-4$; Amy Heaton (Chemistry) $2002-5$; Ali Jabini (Electrical and Computer Engineering) $2002-5$; Ben Murphy (Mathematics and Physics) $2002-4$; Rhett Hadley (Biology) $2002-3$; Adam Gully (Mathematics) $2004-6$; Olakunle Eso (Mathematics and Electrical and Computer Engineering) $2004-7$; Megan Morris (Mathematics and Bioengineering) $2004-7$; Kellen Petersen (Mathematics and Physics) $2006-7$; Dave Arcilesi (Mathematics and Physics) $2006-7$; Peter Sommerkorn (Mechanical Engineering and Mathematics) $2007-$.

- Graduate Students: R. Sawicz, Ph.D. 1995; K. Macarthur, M.S. 1996; C. Orum, $1998-2000$; Ben Murphy $2004-$; Adam Gully $2006-$; M. Morris $2007-$.

- Postdocs Advised: Rich McLaughlin (NSF Postdoc, Ph.D. Princeton, 1994), Yury Grabovsky (Ph.D. NYU, 1995), Knut Solna (Ph.D. Stanford, 1997).

- Graduate Courses: Methods of Applied Mathematics, Theory of Inhomogeneous Materials, Percolation, Statistical Mechanics, Several Complex Variables.

- Undergraduate Courses: Calculus, Engineering Math, Partial Differential Equations.

- Writing a **Calculus textbook** under contract with Addison−Wesley, with an emphasis on examples which illustrate the relevance of mathematics, and highlight how calculus serves as the *operating system* of science and engineering.

- Given numerous **general lectures** over many years on sea ice, composite materials and mathematics to a range of audiences including: elementary school classes from 3^{rd} to 6^{th} grades and groups of high school students in Utah, Alaska, Maryland and Georgia; entering freshmen in the ACCESS program for talented women in the sciences; many groups of undergraduate and graduate students in math, physical sciences and engineering, at universities in the US and abroad; high school math teachers; University donors; Utah State legislators; local and national groups of business leaders.

- As Coordinator for our NSF sponsored **Research Experiences for Undergraduates** (REU) Program, I have encouraged our faculty to involve their REU students in projects which have the potential to lead to publication. Prior to 2002 there were no publications in professional journals we know of involving undergraduates in the Math Department. Since then 6 papers involving REU participants have been published or accepted for publication, another 2 papers have been submitted or will be in the near future, and several more completed REU projects are in preparation for journal submission. Many of our REU students have given lectures on their work in professional and educational settings.

- As **Director of Undergraduate Studies** since 2002, I have led efforts to make our program attractive to a broader audience, with the goal of getting more undergraduates to take more math, and more of them to become math majors and minors. I am currently working with our Undergraduate Curriculum Committee to diversify our degree offerings to also include a major in applied mathematics and a major in statistics, and to provide tracks of specialization within the majors for those students who may desire a more clearly laid-out path. While many factors have contributed, the total number of math majors and pre-majors has risen from 158 in 2001 to 390 in 2005, 388 in 2006, and 390 in 2007.

- During the 6 academic years from 2001-2 through 2006-7, I will have taught well over 2,000 students in 15 sections of Calculus I, II, or III. Since arriving at the University of Utah in 1991, I have taught around **4,000 calculus students** total, mostly freshmen and sophomores.

Selected Invited Lectures (from over 200 conference, university, and general lectures)

6/1989	AMS-SIAM Summer Sem. on the Mathematics of Random Media, Blacksburg, VA
11/1989	Conference on Random Partial Differential Equations, Oberwolfach
1/1990	Workshop on Random Partial Differential Equations, Trieste
1/1991	Homogenization Workshop, MSRI, Berkeley
10/1992	Sea Ice Electromagnetics Workshop, CRREL, N.H.
4/1993	Invited Address, AMS Meeting, Salt Lake City
7/1993	PIERS93 (Progress in Electromagnetics Research Symposium), Cal Tech
8/1993	Third International Conference on Electrical Transport and Optical Properties of Inhomogeneous Materials, Guanajuato, Mexico
9/1993	Second Workshop on Composite Media and Homogenization Theory, Trieste
4/1994	Conf. on Emerging Issues in Math. and Comp. from the Mater. Sci., Pittsburgh
10/1994	Prager Medal Symp. on Het. Solids, Soc. Eng. Sci. Ann. Meet., Texas A&M
11/1994	Workshop on Waves in Complex and Random Media, IMA, U. of Minn.
6/1995	PIERS95, Seattle
11/1995	Tutorial for the Workshop on Disordered Media and Percolation, IMA, Minn.
3/1996	Workshop on the Antarctic Zone Flux (ANZFLUX) Experiment, Barcelona
5/1996	1996 International Geoscience and Remote Sensing Symposium, Lincoln, NE
6/1996	Conf. on Homog. and Random Media in Honor of Serguei Kozlov, Marseille
7/1996	PIERS96, Innsbruck
10/1996	Appl. Math. Workshop for Materials Studies and Industrial Appl., Penn State
11/1996	Sea Ice Electromagnetics Workshop, Universtity of Kansas, Lawrence
1/1997	PIERS97, Hong Kong
3/1997	Gordon Conference on Sea Ice Ecology, Ventura, CA (invited poster)
5/1997	First Congress of the Intl. Soc. for Analysis, Appl. and Comp., U. of Deleware
7/1997	Plenary Address, 1997 Joint Assemblies of the Intl. Assoc. for the Physical Sciences of the Oceans, and the Intl. Assoc. of Meteorolgy and Atmospheric Sciences, Melbourne
7/1997	Fourth International Conference on Composites Engineering, Hawaii
10/1998	American Mathematical Society Meeting, Penn State
1/1999	IUTAM Symp. 99/4: Mech. and Electromagnetic Waves in Structured Media, Sydney
6/1999	Fifth International Conference on Electrical Transport and Optical Properties of Inhomogeneous Materials, Hong Kong
5/2000	Plenary Lecture, Third SIAM Conf. on Math. Aspects of Materials Sci., Philadelphia
5/2000	Statistical Mechanics Conf. in Honor of Joel Lebowitz' 70th Birthday, Rutgers Univ.
6/2000	International Glaciological Society Symposium on Sea Ice and its Interactions with the Ocean, Atmosphere and Biosphere, Fairbanks, Alaska
9/2000	International Conference on Homogenization and Materials Science, Akron
9/2000	Distinguished Lecture Series in Mathematical and Physical Sciences, NSF, Wash. D.C.
5/2001	Plenary Lecture, Hong Kong Mathematical Society, Hong Kong
6/2002	Sixth International Conference on Electrical Transport and Optical Properties of Inhomogeneous Materials, Snowbird, UT
1/2003	Random Phenomena in Applied Mathematics, A Conference in Honor of George Papanicolaou's 60th Birthday, Stanford
2/2003	Applied Mathematics and Applications of Mathematics, European Mathematical Society (EMS) and the French Mathematical Societies (SMAI - SMF), Nice
6/2004	International Workshop on Nonlinear Waves, Hong Kong
10/2004	Society for Engineering Science, Prager Medal Symposium, Lincoln, NE
12/2005	International Glaciological Society Symposium on Sea Ice, Dunedin, New Zealand
7/2006	International Conference on Antarctic Sea Ice Thickness, Hobart, Tasmania
7/2006	Seventh International Conference on Electrical Transport and Optical Properties of Inhomogeneous Materials, Sydney
3/2007	SIAM Conference on Mathematical and Computational Issues in the Geosciences, Santa Fe
11/2007	AMS Congressional Luncheon Briefing, Capitol Hill, Washington D.C.
12/2007	Fall Meeting of the American Geophysical Union, San Francisco
5/2008	Conf. on Frontiers of Climate Science, Kavli Inst. for Theoretical Physics, Santa Barbara

Selected Colloquia and Seminars: US Army Cold Regions Res. and Eng. Lab., NH ('79,'85,'87); Bell Labs ('84); Ecole Normale Supérieure ('84); Université P. & M. Curie ('84); Stanford ('86,'96,'01); Courant Inst. ('84,'89,'91,'93,'94, '97, '00, '05); Rutgers ('84,'86,'87,'95); Princeton Univ. Depts. of Math ('87,'89), Phys. ('87,'91,'96), Chem. Eng. ('89), Civil Eng. ('91,'96); U. of Calif., Davis ('88,'91); U. of Delaware ('89); U. of Chicago ('89,'90, '00); UCLA ('89); U. of Minn. ('90); UCSD ('91); CalTech ('91,'02); U. of Mich. ('91); Duke University ('87,'01); Virginia Tech ('85,'92); University of Virginia ('91); Ioffe Inst., St. Petersburg ('91); Université de Toulon ('92); Penn State ('92,'00); Université de Provence ('93); RPI ('93,'98); Schlumberger ('94); U. S. Naval Academy ('95); Georgia Tech ('95); Universidade de Saõ Paulo ('95,'97); IMPA ('96); U. of Arizona ('95,'05); Ecole Supérieure de Physique et Chimie Industrielle ('96); U. Paris Nord ('01) Hong Kong U. of Sci. and Tech. ('97,'98,'01); U. of Tasmania Antarctic Cooperative Research Center and Dept. of Math, ('97); Chinese Univ. of Hong Kong ('98), National Space Development Agency of Japan ('98), Tulane Univ. ('02); University of Alaska, Fairbanks ('05); University of Washington ('99); Utah State ('99); U. of Utah Depts. of Math ('91,'93,'01,'03,'08), Physics ('97), Geophysics ('94), Materials Science ('91); U. of Utah College of Science Insider Tour Lecture ('08); NASA/Goddard Space Flight Center ('07); Los Alamos National Laboratory ('07); Icebreaker RSV *Aurora Australis* ('99,'07).

Publications

1. S. F. Ackley, A. J. Gow, K. R. Buck and K. M. Golden*, Sea ice studies in the Weddell Sea aboard USCGC *Polar Sea*, *Antarctic Journal of the United States*, 15, pp. 84–86, 1980.

2. K. M. Golden* and S. F. Ackley, Modeling of anisotropic electromagnetic reflection from sea ice, *Journal of Geophysical Research C* (*Oceans*), 86, pp. 8107–8116, 1981.

3. K. Golden and G. Papanicolaou, Bounds for effective parameters of heterogeneous media by analytic continuation, *Communications in Mathematical Physics*, 90, pp. 473–491, 1983.

4. G. W. Milton and K. Golden, Thermal conduction in composites, *Proceedings of the 18th International Thermal Conductivity Congress*, Rapid City, S.D., pp. 571–582, 1983.

5. K. Golden and G. Papanicolaou, Bounds for effective parameters of multicomponent media by analytic continuation, *Journal of Statistical Physics*, 40, pp. 655–667, 1985.

6. K. Golden, S. Goldstein and J. L. Lebowitz, Classical transport in modulated structures, *Physical Review Letters*, 55, pp. 2629–2632, 1985.

7. K. Golden, Bounds on the complex permittivity of a multicomponent material, *Journal of Mechanics and Physics of Solids*, 34, pp. 333–358, 1986.

8. S. F. Ackley, A. J. Gow, K. R. Buck and K. M. Golden, Physical and structural characteristics of Weddell Sea pack ice, Cold Regions Research and Engineering Laboratory (CRREL) Report 87–14, 70 pp., 1987.

9. K. Golden, S. Goldstein and J. L. Lebowitz, Nash estimates and the asymptotic behavior of diffusions, *Annals of Probability*, 16, pp. 1127–1146, 1988.

10. K. Golden, S. Goldstein and J. L. Lebowitz, Diffusion in a periodic potential with a local perturbation, *Journal of Statistical Physics*, 51, pp. 637–656, 1988.

11. K. Golden and S. Goldstein, Arbitrarily slow decay of correlations in quasiperiodic systems, *Journal of Statistical Physics*, 52, pp. 1113–1118, 1988.

12. K. Golden, Convexity in random resistor networks, in *Random Media and Composites*, R.V. Kohn and G.W. Milton (Eds.), Society for Industrial and Applied Mathematics, pp. 149–170, 1989.

13. K. Golden, S. Goldstein and J. L. Lebowitz, Discontinuous behavior of effective transport coefficients in quasiperiodic media, *Journal of Statistical Physics*, 58, pp. 669–684, 1990.

14. G. W. Milton and K. Golden, Representations for the conductivity functions of multicomponent composites, *Communications on Pure and Applied Mathematics*, 43, pp. 657–671, 1989.

15. O. Bruno and K. Golden, Interchangeability and bounds for the effective conductivity of the square lattice, *Journal of Statistical Physics*, 61, pp. 361–382, 1990.

16. K. Golden, Convexity and exponent inequalities for conduction near percolation, *Physical Review Letters*, 65, pp. 2923–2926, 1990.

17. K. Golden, Classical transport in quasiperiodic media, in *Proceedings of AMS-SIAM Summer Seminar on the Mathematics of Random Media*, Blacksburg, Va., June 1989, W. Kohler and B. White (Eds.), American Mathematical Society, pp. 359–373, 1991.

18. K. Golden and S. Goldstein, Arbitrarily slow approach to limiting behavior, *Proceedings of the American Mathematical Society*, 112, pp. 109–119, 1991.

19. K. Golden, Bulk conductivity of the square lattice for complex volume fraction, *International Series of Numerical Mathematics*, 102, pp. 71-83, 1991.

20. K. Golden, Exponent inequalities for the bulk conductivity of a hierarchical model, *Communications in Mathematical Physics*, 143, pp. 467-499, 1992.

21. K. Golden, Scaling law for conduction in partially connected systems, *Physica A*, 207, pp. 213–218, 1994, (special issue for *Proceedings of the Conference on Electrical Transport and Optical Properties of Inhomogeneous Materials, Mexico 1993*, refereed).

22. L. Berlyand and K. Golden, Exact result for the effective conductivity of a continuum percolation model, *Physical Review B*, 50, pp. 2114-2117, 1994.

23. K. M. Golden, Statistical mechanics of conducting phase transitions. *Journal of Mathematical Physics*, 36, pp. 5627-5642, 1995.

24. K. Golden, Bounds on the complex permittivity of sea ice, *Journal of Geophysical Research C* (*Oceans*), 100, pp. 13,699-13,711, 1995.

25. R. Sawicz and K. Golden, Bounds on the complex permittivity of matrix – particle composites, *Journal of Applied Physics*, 78, pp. 7240-7246, 1995.

26. V. I. Lytle and K. M. Golden, Microwave backscatter measurements from first year pack ice in the eastern Weddell Sea, *Antarctic Journal of the United States*, 30, pp. 125-127, 1995.

27. S. F. Ackley, V. I. Lytle, K. M. Golden, M. N. Darling, and G. A. Kuehn, Sea ice measurements during ANZFLUX, *Antarctic Journal of the United States*, 30, pp. 133-135, 1995.

28. K. M. Golden, Percolation models for porous media, in *Homogenization and Porous Media,* U. Hornung (Ed.), Springer - Verlag, pp. 27-43, 1997.

29. K. M. Golden, Critical behavior of transport in lattice and continuum percolation models, *Physical Review Letters*, 78, pp. 3935-3938, 1997.

30. K. M. Golden, The interaction of microwaves with sea ice, in *Wave Propagation in Complex Media, IMA Volumes in Mathematics and its Applications, Vol. 96*, G. Papanicolaou (Ed.), Springer-Verlag, pp. 75-94, 1997.

31. K. M. Golden, Critical behavior of transport in percolation-controlled smart composites, in *Mathematics and Control in Smart Structures, SPIE Proceedings Vol. 3039*, V. V. Varadan and J. Chandra (Eds.), Society of Photo-Optical Instrumentation Engineers, pp. 571-581, 1997.

32. K. M. Golden, Electrical transport properties of high contrast composite materials, in *Proceedings of the Fourth International Conference on Composites Engineering*, D. Hui (Ed.), International Community of Composites Engineering, pp. 363-364, 1997.

33. E. Cherkaeva and K. M. Golden, Inverse bounds for microstructural parameters of composite media derived from complex permittivity measurements, *Waves in Random Media*, 8(4), pp. 437-450, 1998.

34. K. M. Golden, M. Cheney, K. H. Ding, A. K. Fung, T. C. Grenfell, D. Isaacson, J. A. Kong, S. V. Nghiem, J. Sylvester, and D. P. Winebrenner, Forward electromagnetic scattering models for sea ice, *IEEE Transactions on Geoscience and Remote Sensing*, 36(5), pp. 1655-1674, 1998.

35. K. M. Golden, D. Borup, M. Cheney, E. Cherkaeva, M. S. Dawson, K. H. Ding, A. K. Fung, D. Isaacson, S. A. Johnson, A. K. Jordan, J. A. Kong, R. Kwok, S. V. Nghiem, R. G. Onstott, J. Sylvester, D. P. Winebrenner and I. H. H. Zabel, Inverse electromagnetic scattering models for sea ice, *IEEE Transactions on Geoscience and Remote Sensing*, 36(5), pp. 1675-1704, 1998.

36. K. C. Jezek, D. K. Perovich, K. M. Golden, C. Luther, D. Barber, P. Gogineni, T. C. Grenfell, A. K. Jordan, C. D. Mobley, S. V. Nghiem, and R. Onstott, A broad spectral, interdisciplinary investigation of the electromagnetic properties of sea ice, *IEEE Transactions on Geoscience and Remote Sensing*, 36(5), pp. 1633-1641, 1998.

37. R. Kwok, S. V. Nghiem, S. Martin, D. P. Winebrenner, A. J. Gow, D. K. Perovich, C. T. Swift, D. G. Barber, K. M. Golden, and E. Knapp, Laboratory measurements of sea ice: connections to microwave remote sensing, *IEEE Transactions on Geoscience and Remote Sensing*, 36(5), pp. 1716-1730, 1998.

38. K. M. Golden, S. F. Ackley and V. I. Lytle, The percolation phase transition in sea ice, *Science*, 282, pp. 2238-2241, 1998.

39. K. M. Golden and S. M. Kozlov, Critical path analysis of transport in highly disordered random media, in *Homogenization*, V. Berdichevsky, V. Jikov, and G. Papanicolaou (Eds.), World Scientific, pp. 21 - 34, 1999.

40. K. M. Golden, Brine percolation and the transport properties of sea ice, *Annals of Glaciology*, 33, pp. 28-36, 2001.

41. K. M. Golden, Critical behavior of transport in sea ice, *Physica B*, 338, pp. 274-283, 2003.

42. K. M. Golden, A. L. Heaton*, H. Eicken and V. I. Lytle, Void bounds for fluid transport in sea ice, *Mechanics of Materials*, 38, pp. 801-817, 2006.

43. J. Zhu, A. Jabini*, K. M. Golden, H. Eicken and M. Morris*, A network model for fluid transport in sea ice, *Annals of Glaciology*, 44, pp. 129-133, 2006.

44. A. Gully*, L. G. E. Backstrom, H. Eicken, and K. M. Golden, Complex bounds and microstructural recovery from measurements of sea ice permittivity, *Physica B*, 394, pp. 357-362, 2007.

45. K. M. Golden, H. Eicken, A. L. Heaton*, J. Miner, D. Pringle, and J. Zhu, Thermal evolution of permeability and microstructure in sea ice, *Geophysical Research Letters*, 34, L16501 (6 pages and issue cover), 2007.

46. J. Basinger, E. Homer, B. L. Adams and K. M. Golden, Two dimensional grain boundary percolation in alloy 304 stainless steel, submitted to *Scripta Materialia*.

47. C. Orum, E. Cherkaev and K. M. Golden, Inverse bounds on the separation of inclusions in a composite from effective property measurements, in preparation.

48. K. M. Golden, T. Finlayson*, J. Zhu, H. Eicken, and D. Pringle, Bounds on the thermal conductivity of sea ice, in preparation.

49. J. Vry, K. Petersen*, and K. M. Golden, Fluid connectivity transition in rocks at depth in the Southern Alps of New Zealand, in preparation.

50. L. Symeonova, O. Eso*, D. Dobson, and K. M. Golden, An effective complex permittivity for waves in random media with finite wavelength, in preparation.

* denotes undergraduate investigator.

Proceedings Edited

1. *Mathematics of Multiscale Materials*, K. M. Golden, G. R. Grimmett, R. D. James, G. W. Milton, and P. N. Sen (Eds.), *IMA Volumes in Mathematics and its Applications*, Vol. 99, Springer-Verlag, 1998.

2. *Proceedings of the Sixth International Conference on Electrical Transport and Optical Properties of Inhomogeneous Media, ETOPIM6*, G. W. Milton, K. M. Golden, D. Dobson, and Z. V. Vardeny (Eds.), *Physica B, Condensed Matter*, Vol. 338, Nos. 1-4, October 2003.

Media Articles

1. Study of Antarctic ice has scary moments for Utahn: Storm put scientific team in danger of losing costly equipment – and lives, Joseph Bauman, *Deseret News*, Salt Lake City, p. A12, Sept. 12, 1994.

2. The mathematics of ice: U. professor goes south to study Antarctica's blanket, Lee Siegel, *The Salt Lake Tribune*, Salt Lake City, pp. C1-C2, Sept. 12, 1994.

3. Icebreaker burns, Andrew Darby, *Sydney Morning Herald*, Sydney, p. 6, July 23, 1998.

4. Fire strands Antarctic ship in sea ice, *The Advertiser*, Adelaide, p. 14, July 23, 1998.

5. Antarctic voyage stopped by fire, *The Canberra Times*, Canberra, p. 4, July 23, 1998.

6. Hard battle to repair ice ship, David Carrigg, *The Mercury*, Hobart, p. 3, July 24, 1998.

7. Icebreaker abandons voyage, *The Advertiser*, Adelaide, p. 15, July 24, 1998.

8. Cool math: Utahn explains a key step in how sea ice maintains Earth's climate and ocean life, Lee Siegel, *The Salt Lake Tribune*, Salt Lake City, pp. B1-B2, Dec. 24, 1998.

9. Voyage to Antarctica: Chain saws and beet juice become research tools for Utah mathematician studying polynya 'ice factory', Lee Siegel, *The Salt Lake Tribune*, Salt Lake City, pp. J1,J6, Dec. 19, 1999.

10. Mathematician on ice: Adventurous voyages to Antarctica test mathematical models of sea ice, Ivars Peterson, *Science News*, Washington D. C., pp. 106-108 (and cover), Aug. 12, 2000.

11. Icy calculations on a hot topic: Mathematics of ice to aid global warming forecasts, Lee Siegel, U. of Utah press release, published by sciencedaily.com, newswise.com, eurekalert.org, physorg.com, and other sites, September 10, 2007.

12. Modeling ice-melt may lead to improved global climate forecasts, Matt Ford, *Ars Technica*, September 12, 2007.

13. Electronics help predict global warming, R. Colin Johnson, *EE Times* (and *EE Times Asia*), September 18, 2007.

14. Water pours through pores in sea ice, Nicole Branan, *Geotimes*, pp. 16-18, November 2007.

Other Media Activities

1. Discovery Channel/NBC News Special: *Savant's Sequences*, January 2003 – during filming worked on elementary mathematics and algorithms with Kim Peek, the savant on whom the movie *Rainman* was based and who has been featured in *Scientific American*; also in similar show with Kim Peek by a Japanese TV network, broadcast there (both appearances at the request of U. of Utah).

2. Interviewed for radio shows on NPR, KUER and local stations concerning Antarctic and Arctic sea ice, climate change, and polar biology.