

Dana Z. Anderson

Personal:

Born April 10, 1953; Chicago, Illinois

Degrees:

BSEE 1975, Cornell University

PhD 1981, University of Arizona

Thesis: "The Four Mode Linearly Polarized Ring Laser Gyroscope"

Honors and Awards:

Meritorious Teaching Award, University of Arizona, 1977-1978

Presidential Young Investigator Award, 1985

Alfred P. Sloan Research Fellowship, 1986-1990

Fellow, Optical Society of America

R. W. Wood Prize, Optical Society of America, 1994

Fellow, American Physical Society, 2000

Alexander von Humboldt Award, 2001

Appointments:

Engineer in Infrared Astronomy, Cornell University, 1973-1974

Engineer in High Energy Physics, Cornell University (Summer) 1975

Engineering Specialist, Litton Industries (Summer) 1978, 1979

Physicist, Max-Planck Institute, Garching, W. Germany (Summer) 1980

Research Associate, University of New Mexico, 1980-1981

Consultant, Litton Industries Guidance and Control Division, 1981-1982

Research Fellow in Physics, California Institute of Technology, 1981-1984

Lecturer in Physics, California Institute of Technology, 1983-1984

Consultant, Rockwell International Corp. Marine Systems Division, 1982-1984

Assistant Professor, Department of Physics, University of Colorado, 1984-1989

Associate Professor, Department of Physics, University of Colorado, 1989-1995

Professor, Department of Physics, University of Colorado, 1995-present

Member, Joint Institute for Laboratory Astrophysics, University of Colorado and National
Bureau of Standards, 1984-1985

Fellow, JILA, University of Colorado and National Institute of Standards and Technology,
1985-present

Director, Optical Science and Engineering Program, University of Colorado, 1998-present

Editorial Activities:

Advisory Editor, Optics Communications

Topical Editor, Holography and Optical Information Processing, Optics Letters

Member of the Board of Editors, Journal of Neural Networks

Series Advisory Board Member, Computation and Neural Systems, Addison Wesley,
Publisher

Editor, Neural Information Processing Systems, 1988, AIP Press

Guest Editor, IEEE Journal of Quantum Electronics, Special Issue on Inertial Sensors, Frequency Standards and Clocks, May 1987

Publications:

Books

D. Z. Anderson, editor, *Neural Information Processing Systems*, AIP Press, New York, (1988) 871 pages.

Papers

D. Z. Anderson, M. O. Scully and W. E. Speed, "A new non-invasive technique for cardiac pressure measurement. II. Scattering from encapsulated bubbles," in Noninvasive Cardiac Measurements (SPIE Vol. 167, 1979) (invited paper).

V. E. Sanders, D. Z. Anderson and M. O. Scully, "A four mode solution to the locking problem in two-mode ring-laser gyros," in Laser Inertial Rotation Sensors (SPIE Vol. 167, 1978).

D. Z. Anderson, W. W. Chow, V. E. Sanders and M. O. Scully, "Novel multioscillator approach to the problem of locking in two-mode ring-laser gyros. Part II," *Appl. Opt.* 18, 491 (1979).

D. C. Grant, Jr., S. Madan, V. Sanders, D. Z. Anderson, W. Chow and M. Scully, "Litton ring laser gyro update," in Proceedings, NAECON (1980), p. 73.

D. Z. Anderson, W. Chow, M. O. Scully and V. E. Sanders, "Optically biased laser gyro," *Opt. Lett.* 5, 10 (1980).

S. E. Whitcomb, D. Z. Anderson, R. W. P. Drever, Y. Gursel, M. Hereld and R. Spero, "Laser interferometer experiments at Caltech," in Proceedings of the Third Marcel Grossman Meeting on General Relativity, Shanghai, 1982.

R. W. P. Drever, S. Hoggan, J. Hough, B. Meers, A. Munley, G. Newton, H. Ward, D. Z. Anderson, Y. Gursel, M. Hereld, R. Spero and S. E. Whitcomb, "Developments in laser interferometer gravitational wave detectors," in Proceedings of the Third Marcel Grossman Meeting on General Relativity, Shanghai, 1982.

R. Spero, D. Z. Anderson, R. W. P. Drever, Y. Gursel, G. Gutt, M. Hereld, J. Kaufman and S. E. Whitcomb, "The Caltech gravitational wave detector," in Proceedings of the 10th International Conference on General Relativity and Gravitation, Padova, Italy (1983).

D. Z. Anderson, J. C. Frisch and C. S. Masser, "A mirror reflectometer based on optical cavity decay time," *Appl. Opt.* 23, 1238 (1984).

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Papers (continued)

- D. Z. Anderson, "Coupled resonators employing phase conjugation and ordinary mirrors," *Opt. Lett.* 9, 417 (1984).
- M. Hereld and D. Z. Anderson, "Beat frequency locking in passive ring laser gyroscopes," in The Physics of Optical Ring Gyros (SPIE Vol. 487, 1984), p. 33.
- D. Z. Anderson, "Alignment of resonant optical cavities," *Appl. Opt.* 23, 2944 (1984).
- M. Cronin-Golomb and D. Z. Anderson, "Canceling beam deflection in an acoustooptic frequency shifter using a self-pumped phase conjugating mirror," *Appl. Phys. Lett.* 47, 346 (1985).
- D. Z. Anderson, "Coherent optical eigenstate memory," *Opt. Lett.* 11, 56 (1986).
- D. Z. Anderson, "Optical resonators for associative memory," in Nonlinear Optics and Applications (SPIE Vol. 613, 1986), p. 85.
- J. Gea-Banacloche, M. O. Scully and D. Z. Anderson, "Influence of phase fluctuations on the measurement of the frequency of a laser," *Opt. Commun.* 57, 67 (1986).
- D. Z. Anderson, "Optical gyroscopes," *Sci. Am.* 254, 94 (1986).
- D. Z. Anderson, "Rotation, gyroscopes and general relativity," *Laser Topics* 8, 7 (1986).
- D. Z. Anderson, "Optical resonators and neural networks," in Neural Networks for Computing, AIP Conf. Proc. 151 (J. S. Benker, Ed., AIP, New York, 1986), pp. 12-16.
- D. Z. Anderson and R. Saxena, "Theory of multimode operation of a unidirectional ring oscillator having photorefractive gain: weak-field limit," *J. Opt. Soc. Am. B* 4, 164 (1987).
- D. Z. Anderson and M. C. Erie, "Resonator memories and optical novelty filters," *Opt. Engineering* 26, 434 (1987) (invited paper).
- D. Z. Anderson, D. M. Lininger and J. Feinberg, "Optical tracking novelty filter," *Opt. Lett.* 12, 123 (1987).
- D. Z. Anderson and D. M. Lininger, "Dynamic optical interconnects: volume holograms as optical two-port operators," *Appl. Opt.* 26, 5031 (1987) (invited paper).
- M. J. O'Callaghan and D. Z. Anderson, "Spatial light modulators for optical neuromorphs," in Spatial Light Modulators and Applications II (SPIE Vol. 825, 1987), p. 121.
- D. Z. Anderson, "Optical resonators, mode competition and associative memory," *Optics News* 13, 16 (1987) (invited paper).

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Papers (continued)

- D. Z. Anderson, D. M. Lininger and M. J. O'Callaghan, "Adaptive interconnects for optical neuromorphs: demonstration of a projection operator," Proceedings of IEEE First International Conference on Neural Networks, June 21-24, San Diego, CA (1987).
- D. Z. Anderson and D. M. Lininger, "Dynamic optical interconnects: volume holograms as optical two-port operators," Appl. Opt. 26, 5031 (1987) (invited paper)
- D. Z. Anderson, "Nonlinear optical implementations of associative memory," (invited article) in 1989 McGraw Hill Yearbook of Science and Technology (McGraw-Hill, 1988), pp. 232-234.
- R. Saxena and D. Z. Anderson, "Effects of an applied field on the steady-state characteristics of a unidirectional photorefractive ring oscillator," Opt. Commun. 66, 172 (1988).
- D. Z. Anderson (Editor), Neural Information Processing Systems (AIP Press, 1988), 871 pages.
- D. Z. Anderson, "Nonlinear optical neural networks: Dynamic ring oscillators," (invited paper) in Neural Computers (R. Eckmiller and C. von der Malsberg, Eds., Springer-Verlag, New York, 1988), pp. 417-424.
- D. Z. Anderson, "Material demands for optical neural networks," (invited paper) MRS Bull. XIII, pp. 30-35 (1988).
- D. Z. Anderson and J. Feinberg, "Optical novelty filters," (invited paper), IEEE J. Quant. Electron. 25, 635 (1989).
- D. M. Lininger, P. J. Martin and D. Z. Anderson, "Bistable ring resonator utilizing saturable photorefractive gain and loss," Opt. Lett. 14, 697 (1989).
- D. Z. Anderson, "Optical systems that imitate human memory," Computers in Physics 3, 18 (1989).
- D. Z. Anderson, "Efficient second-harmonic generation in glass fibers: The possible role of photo-induced charge redistribution," in Nonlinear Optical Properties of Materials (H. R. Schlossberg and R. V. Wick, Eds., SPIE Vol. 1148, 1989), pp. 186-196.
- N. Sampas and D. Z. Anderson, "Stabilization of laser beam alignment to an optical resonator by heterodyne detection of off-axis modes," Appl. Opt. 29, 394 (1990).
- D. M. Lininger, D. Crouch, P. J. Martin and D. Z. Anderson, "Theory of bistability and self pulsing in a ring resonator with saturable photorefractive gain and loss," Opt. Commun. 76, 89-96 (1990).

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Papers (continued)

- D. Z. Anderson, "Competitive and cooperative dynamics in nonlinear optical circuits," (invited chapter) in An Introduction to Neural and Electronic Networks (S. V. Zornetzer, L. J. Davis and C. Lau, Eds., Academic Press, 1990), pp. 349-362.
- D. Z. Anderson, R. Saxena and M. Cronin-Golomb, "Gravitationally induced pulsing of a resonator with two phase-conjugating mirrors and an injected signal," *Phys. Rev. A (Rapid Communication)* 42, 3142-3144 (1990).
- D. Z. Anderson, C. Benkert, B. Chorbajian and A. Hermanns, "Photorefractive flip-flop," *Opt. Lett.* 16, 250-252 (1991).
- M. Saffman and D. Z. Anderson, "Mode multiplexing and holographic demultiplexing communication channels on a multimode fiber," *Opt. Lett.* 16, 300-302 (1991).
- D. D. Crouch, D. M. Lininger and D. Z. Anderson, "Theory of bistability and self-pulsing in an optical ring circuit having saturable photorefractive gain, loss, and photorefractive feedback," in Nonlinear Dynamics in Optical Systems (N. B. Abraham, E. M. Gormire and P. Mandel, Eds., Optical Society of America, 1991), pp. 483-487.
- D. D. Crouch and D. Z. Anderson, "Dynamics of an optical ring circuit having photorefractive gain and loss and history-dependent feedback," *J. Opt. Soc. Am. B* 8, 1315-1325 (1991).
- D. Z. Anderson, V. Mizrahi and J. E. Sipe, "Model for second-harmonic generation in glass optical fibers based on asymmetric photoelectron emission from defect sites," *Opt. Lett.* 16, 796-798 (1991).
- M. J. O'Callaghan and D. Z. Anderson, "Multiple scattering of light within two-dimensional volume halograms," *J. Opt. Soc. Am. A* 8, 1425-1433 (1991).
- C. Benkert and D. Z. Anderson, "Controlled competitive dynamics in a photorefractive ring oscillator: 'Winner-takes-all' and the 'voting-paradox' dynamics," *Phys. Rev. A* 44, 4633-4638 (1991).
- M. Saffman, C. Benkert and D. Z. Anderson, "Self-organizing photorefractive frequency demultiplexer," *Opt. Lett.* 16, 1993-1995 (1991).
- G. Zhou, L. Bintz and D. Z. Anderson, "Fiber-optic acoustic Fourier transducer for audio sound processing," *Appl. Opt.* 31, 1740-1744 (1992).
- D. Z. Anderson, C. Benkert and D. D. Crouch, "Competitive and cooperative multimode dynamics in photorefractive ring circuits," in Neural Networks for Perception, Vol. 2 (H. Wechsler, Ed., Academic, Boston, 1992), pp. 214-252.
- D. Z. Anderson, V. Mizrahi and J. E. Sipe, "A model of second-harmonic generation in glass fibers based on multiphoton ionization interference effects," in International

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Papers (continued)

Workshop on Photoinduced Self-Organization Effects in Optical Fiber (SPIE Vol. 1516, 1992), pp. 154-161.

- B. Guo and D. Z. Anderson, "Undepleted pump regime of Hill grating formation in optical fibers," *Appl. Phys. Lett.* 60, 671-673 (1992).
- A. Hermanns, C. Benkert, D. M. Lininger and D. Z. Anderson, "The transfer function and impulse response of photorefractive two-beam coupling," *IEEE J. Quant. Electron.* 28, 750-756 (1992).
- D. Z. Anderson, N. B. Baranova, C. Greene and B. Ya. Zel'dovich, "Interference of one- and two-photon processes in the ionization of atoms and molecules," *Zh. Eksp. Teor. Fiz.* 102, 397-405 (1992); [transl. *Sov. Phys. JETP* 75, 210-214 (1992)].
- G. Zhou and D. Z. Anderson, "Photorefractive delay line for the visualization and processing of time-dependent signals," *Opt. Lett.* 18, 167-169 (1993).
- G. Zhou, L. Bintz, D. Z. Anderson and K. E. Bright, "A life-sized physical model of the human cochlea with optical holographic readout," *J. Acous. Soc. Am.* 93, 1516-1523 (1993).
- M. Saffman, D. Montgomery, A. A. Zozulya, K. Kuroda and D. Z. Anderson, "Transverse instability of counterpropagating waves in photorefractive media," *Phys. Rev. A* 48, 3209-3215 (1993).
- D. Z. Anderson, V. Mizrahi, T. Erdogan and A. E. White, "Production of in-fibre gratings using a diffractive optical element," *Electronics Lett.* 29, 566-568 (1993).
- M. Saffman, A. A. Zozulya and D. Z. Anderson, "Transverse instability of energy-exchanging counterpropagating waves in photorefractive media," *J. Opt. Soc. Am. B* 11, 1409-1417 (1994).
- M. Saffman, D. Montgomery and D. Z. Anderson, "Collapse of a transverse-mode continuum in a self-imaging photorefractively pumped ring resonator," *Opt. Lett.* 19, 518-520 (1994).
- G. Zhou and D. Z. Anderson, "Acoustic signal recognition with a photorefractive time-delay neural network," *Opt. Lett.* 19, 655-657 (1994).
- A. A. Zozulya, M. Saffman and D. Z. Anderson, "Propagation of light beams in photorefractive media: fanning, self-bending, and formation of self-pumped four-wave mixing phase conjugation geometries," *Phys. Rev. Lett.* 73, 818-821 (1994).
- G. Montemezzani, G. Zhou and D. Z. Anderson, "Self-organized learning of purely temporal information in a photorefractive optical resonator," *Opt. Lett.* 19, 2012-2014 (1994).

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Papers (continued)

- M. Saffman, D. Montgomery, A. A. Zozulya and D. Z. Anderson, "Topology preserving mappings in a self-imaging photorefractively pumped ring resonator," *J. Chaos, Solitons and Fractals* 4, 2077-2092 (1994).
- G. Montemezzani, G. Zhou and D. Z. Anderson, "Unsupervised learning of temporal features," *Optics & Photonics News* (special issue) 5, 38-39 (1994).
- A. A. Zozulya, M. Saffman and D. Z. Anderson, "Double phase conjugate mirror: convection and diffraction," *J. Opt. Soc. Am. B* 12, 255-264 (1995).
- D. Z. Anderson, M. Saffman and A. Hermanns, "Manipulating the information carried by an optical beam with reflexive photorefractive beam coupling," *J. Opt. Soc. Am. B* 12, 117-123 (1995).
- A. A. Zozulya and D. Z. Anderson, "Propagation of an optical beam in a photorefractive medium in the presence of a photovoltaic nonlinearity or an externally applied electric field," *Phys. Rev. A* 51, 1520-1531 (1995).
- A. A. Zozulya, M. Saffman and D. Z. Anderson, "Stability analysis of two photorefractive ring resonator circuits: the flip-flop and the feature extractor," *J. Opt. Soc. Am. B* 12, 1036-1047 (1995).
- A. A. Zozulya and D. Z. Anderson, "Nonstationary self-focusing in photorefractive media," *Opt. Lett.* 20, 837-839 (1995).
- M. J. Renn, D. Montgomery, O. Vdovin, D. Z. Anderson, C. E. Wieman and E. A. Cornell, "Laser-guided atoms in hollow-core optical fibers," *Phys. Rev. Lett.* 75, 3253-3256 (1995).
- A. A. Zozulya, G. Montemezzani and D. Z. Anderson, "The fascinating behavior of light in photorefractive media," *Optics & Photonics News*, 6 (March 1995), pp. 6, 48-50, 64.
- A. A. Zozulya and D. Z. Anderson, "Spatial structure of light and a nonlinear refractive index generated by fanning in photorefractive media," *Phys. Rev. A* 52, 878-881 (1995).
- G. Montemezzani, A. A. Zozulya, L. Czaia, D. Z. Anderson, M. Zgonik and P. Gunter, "Origin of the lobe structure in photorefractive beam fanning," *Phys. Rev. A* 52, 1791-1794 (1995).
- A. A. Zozulya, G. Montemezzani and D. Z. Anderson, "Analysis of total-internal-reflection phase-conjugate mirror," *Phys. Rev. A* 52, 4167-4175 (1995).
- A. A. Zozulya, D. Z. Anderson and M. Saffman, "Control of mutual spatial coherence of temporal features by reflexive photorefractive coupling," *J. Opt. Soc. Am. B* 13, 41-49 (1996).

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Papers (continued)

- D. Z. Anderson, M. A. Bolshtyansky and B. Ya. Zel'dovich, "Stabilization of the speckle pattern of a multimode fiber undergoing bending," *Opt. Lett.* 21, 785-787 (1996).
- A.V. Mamaev, M. Saffman, D.Z. Anderson and A.A. Zozulya, "Propagation of light beams in anisotropic nonlinear media: From symmetry breaking to spatial turbulence," *Phys. Rev. A* 54, 870-879 (1996).
- M. J. Renn, E. A. Donley, E. A. Cornell, C. E. Wieman and D. Z. Anderson, "Evanescent wave guiding of atoms in hollow optical fibers," *Phys. Rev. A* 53, R648-651 (1996).
- A. A. Zozulya, D. Z. Anderson, A. V. Mamaev and M. Saffman, "Self-focusing and soliton formation in media with anisotropic nonlocal material response," *Europhys. Lett.* 36, 419-424 (1996).
- M. A. Vorontsov, M. Zhao and D. Z. Anderson, "Nonlinear dynamics of a 2D feedback system with photorefractive gain," *Opt. Commun.* 134, 191-194 (1997).
- M. J. Renn, A. A. Zozulya, E. A. Donley, E. A. Cornell and D. Z. Anderson, "Optical dipole force fiber guiding and heating of atoms," *Phys. Rev. A* 55, 3684-3696 (1997).
- A. V. Mamaev, A. A. Zozulya, V. K. Mezentsev, D. Z. Anderson and M. Saffman, "Bound dipole solitary solutions in anisotropic nonlocal self-focusing media," *Phys. Rev. A* 56, R1110-1113 (1997).
- D. Z. Anderson, "High gains for polymer dynamic holography," *Science* 277, 530-531 (1997).
- A. A. Zozulya, D. Z. Anderson, A. V. Mamaev and M. Saffman, "Solitary attractors and low-order filamentation in anisotropic self-focusing media," *Phys. Rev. A* 57, 522-534 (1998).
- V. V. Shkunov and D. Z. Anderson, "Radiation transfer model of self-trapping spatially incoherent radiation by nonlinear media," *Phys. Rev. Lett.* 81, 2683-2686 (1998).
- V. E. Saouma, D. Z. Anderson, K. Ostrander, B. Lee and V. Slowik, "Application of fiber Bragg grating in local and remote infrastructure health monitoring," *Materials and Structures* 31, 259-266 (1998).
- D. Z. Anderson, R. W. Brockett and N. Nuttall, "Information dynamics of photorefractive two-beam coupling," *Phys. Rev. Lett.* 82, 1418-1421 (1999).
- S. Kraut, N. Nuttall and D. Z. Anderson, "Photorefractive two-beam coupling equations with multiple spatial-temporal modes: an SVD approach," *Appl. Phys. B: Lasers and Optics* 68, 937-945 (1999).

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Papers (continued)

- D. Z. Anderson, C. Benkert, V. Hebler, J. Jang, D. Montgomery and M. Saffman, "Optical implementation of a self-organizing feature extractor," in Proceedings, Neural Information Processing System Conference (in press).
- D. Z. Anderson, C. Benkert and D. D. Crouch, "Photorefractive systems and the elements of decision making," in Optical Computing (S. Lee and L. Giles, Eds., Academic, Boston, in press).
- D. Mueller, E. A. Cornell, D. Z. Anderson and E. R. I. Abraham, "Guiding laser cooled atoms in hollow core fibers," Phys. Rev. A 61, 033411/1-6 (2000).
- D. Mueller, P. Schwindt, R. Grow, D. Z. Anderson and E. A. Cornell, "Guiding neutral atoms around curves with lithographically patterned current-carrying wires," Phys. Rev. Lett. 83, 5194-5197 (1999).
- V. B. Damiao, D. L. Manuzak, W. S. Bickel and D. Z. Anderson, "Two-beam coupling modules for photorefractive optical circuits," Appl. Opt. 40, 3365-3370 (2001).
- D. Mueller, E. A. Cornell, M. Prevedelli, P. D. D. Schwindt, A. Zozulya and D. Z. Anderson, "Waveguide atom beam splitter for laser-cooled neutral atoms," Opt. Lett. 25, 1382-1384 (2000).
- D. Z. Anderson, V. B. Damiao, E. Fotheringham, D. Popovic, S. Romisch and Z. Popovic, "Optically smart active antenna arrays," Microwave Symposium Digest, 2000 IEEE MTT-S International, 2, 843 (2000).
- V. B. Damiao, E. Fotheringham, V. Shkunov, L. Czaia and D. Z. Anderson, "Photorefractive BaTiO₃ spheres and spherical disks," Opt. Lett. 26, 611-613 (2001).
- D. Mueller, E. A. Cornell, M. Prevedelli, P. D. D. Schwindt, Y.-J. Wang and D. Z. Anderson, "Magnetic switch for integrated atom optics," Phys. Rev. A 63, 041602(R)/1-3 (2001).
- D. Z. Anderson, V. Damiao, D. Popovic, Z. Popovic, S. Romisch and A. Sullivan, "-70 dB optical carrier suppression by two-beam coupling in photorefractive media," Appl. Phys. B 72, 743-748 (2001).
- D. Z. Anderson, "A matrix formulation of photorefractive two-beam coupling," Phys. Rev. A (submitted).
- E. Fotheringham and D. Z. Anderson, "A miniature photorefractive circuit for principal component extraction," Appl. Opt. 42, 4736-4746 (2003).
- H. Ye, O. Nilsen, D. Z. Anderson and V. M. Bright, "Optical olfactory sensor with holographic readout," IEEE Sensors Journal (submitted).

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Papers (continued)

- E. Fotheringham, S. Romisch, P. C. Smith, D. Popovic, D. Z. Anderson and Z. Popovic, "A lens antenna array with adaptive optical processing," *IEEE Trans. Antennas & Propagation* 50, 607-617 (2002).
- V. Damiao and D. Z. Anderson, "The geometry underlying photorefractive two-beam coupling," *J. Opt. A: Pure & Appl. Opt.* 5, S536-S549 (2003).
- D. Z. Anderson, "A holographic scheme for independent component analysis," *Appl. Phys.* 95, 3272-3278 (2004).
- S. Du, M. B. Squires, Y. Imai, L. Czaia, R. A. Saravanan, V. Bright, J. Reichel, T. W. Hansch and D. Z. Anderson, "Atom chip Bose-Einstein condensation in a portable vacuum cell," *Phys. Rev. A* 70, 053606/1-4 (2004).
- Y.-J. Wang, D. Z. Anderson, V. M. Bright, E. A. Cornell, Q. Diot, T. Kishimoto, M. Prentiss, R. A. Saravanan, P. D. D. Schwindt, S. R. Segal and S. Wu, "Atom Michelson interferometer on a chip using a Bose-Einstein condensate," *Phys. Rev. Lett.* 94, 090405/1-4 (2005).
- P. D. D. Schwindt, E. A. Cornell, T. Kishimoto, Y.-J. Wang and D. Z. Anderson, "Efficient loading of a magnetic waveguide on an atom chip," *Phys. Rev. A* 72, 023612/1-8 (2005).
- H. Ye, O. Nilsen, V. M. Bright and D. Z. Anderson, "Holographic chemical vapor sensor," *Opt. Lett.* 30, 1467-1469 (2005).
- B. T. Seaman, M. Kramer, D. Z. Anderson and M. J. Holland, "Atomtronics: Ultracold atom analogs of electronic devices," *Phys. Rev. A* 75, 023615/1-12 (2007).
- J. A. Stickney, D. Z. Anderson and A. A. Zozulya, "Transistorlike behavior of a Bose-Einstein condensate in a triple-well potential," *Phys. Rev. A* 75, 013608/1-11 (2007).
- J. A. Stickney, D. Z. Anderson and A. A. Zozulya, "Increasing the coherence time of Bose-Einstein-condensate interferometers with optical control of dynamics," *Phys. Rev. A* 75, 063603/1-12 (2007).
- R. A. Pepino, J. Cooper, D. Z. Anderson and M. J. Holland, "Atomtronic circuits of diodes and transistors," *Phys. Rev. Lett.* (submitted).
- S. M. Hughes and D. Z. Anderson, "Modulation-enhanced sensitivity of holographic interferometry," *Appl. Opt.* 46, 7868-7871 (2007).
- J. A. Stickney, R. P. Kafle, D. Z. Anderson and A. A. Zozulya, "Theoretical analysis of a single- and double-reflection atom interferometer in a weakly confining magnetic trap," *Phys. Rev. A* 77, 043604/1-9 (2008).

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Organizational Activities:

Organizer and Technical Program Committee Chairman, Workshop on Neural Networks and Neuromorphic Systems, October 8-9, 1986, Woburn, MA (Sponsored by the National Science Foundation).

Editor, Proceedings of the First International Conference on Neural Information Processing Systems, November 8-12, 1987, Denver, CO. Also reviewed contributions for this meeting.

Technical program cochairman, 1988 International Neural Network Society Annual Meeting, September 6-10, Boston, MA.

Program committee, APS Division of Atomic, Molecular and Optical Physics, 1987-1989.

Technical program committee, Second IEEE Conference on Neural Information Processing Systems, Denver, CO, 1988.

Technical program committee, Second topical meeting on photorefractive materials, effects and devices, France, 1989.

Technical program committee, Fourth IEEE Conference on Neural Information Processing Systems, Denver CO, November 1990.

Vice-Chairman, 1991 Gordon Conference on Nonlinear Optics.

Program Committee, Conference on Lasers and Electrooptics, Baltimore MD, May 12-17, 1991.

Co-Chairman, Photorefractive Materials, Effects and Devices Conference, Estes Park, CO, June 11-14, 1995.

Organizing Committee, Photorefractives Conference, 1997.

Organizing Committee, Conference on Nonlinear Optics, Hawaii, August 1998.

Organizing Committee, Conference on Photorefractive Materials, Effects, and Devices, Denmark, June 1999.

Organizing Committee, Conference on Lasers and Electro Optics/Quantum Electronics and Laser Science Conference 2000, San Francisco, CA, May 7-12, 2000.

Organizing Committee, MRS Conference, 2000.

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Conference Presentations:

- “Four mode solution to the locking problem in two-mode ring laser gyros,” Conference on Laser Inertial Rotation Sensors, SPIE, San Diego, CA, August 1978.
- “Passive ring laser gyroscopes for inertial rotation sensing,” Conference on General Relativity and Quantum Electronics, Max Planck Institute, Garching, West Germany, June 1980.
- “Status of Caltech's gravitational wave detector,” 11th Texas Symposium on Relativistic Astrophysics, Austin, TX, December 1982 (poster session).
- “Caltech's gravitational wave detector,” 10th International Conference on General Relativity, Padua, Italy, July 1983.
- “A mirror reflectometer based on optical cavity decay time,” Annual Meeting of the Optical Society of America, New Orleans, LA, October 1983.
- “Multioscillator laser gyros -- A tutorial review,” Workshop on Physics of Optical Ring Gyros, Snowbird, UT, January 1984.
- “Beat frequency locking in passive ring laser gyroscopes,” Workshop on Physics of Optical Ring Laser Gyros, Snowbird, UT, January 1984 (poster session).
- “Measuring gravitomagnetic drag,” Workshop on Physics of Optical Ring Gyros, Snowbird, UT, January 1984.
- “Coupled resonators as gravitational wave detectors,” 14th Winter Colloquium on Quantum Electronics, Snowbird, UT, January 1984.
- “Optical eigenstate memories,” Workshop on Frontiers in Very Large Scale Integration, LaJolla, CA, July 1985 (invited paper).
- “Coherent optical eigenstate memory,” Annual Meeting of the Optical Society of America, Washington, DC, October 1985.
- “Theory of multimode oscillation in a ring resonator with photorefractive gain: Threshold limit,” Annual Meeting of the Optical Society of America, Washington, DC, October 1985.
- “Associative memory using optical resonators,” Conference on Optoelectronics and Laser Applications in Science and Engineering, Los Angeles, CA, January 1986 (invited paper).
- “Optical holographic resonators for associative memory,” Conference on Neural Networks for Computing, Snowbird, UT, April 1986.
- “Real-time programmable holographic resonators,” Conference on Lasers and Electro-Optics, San Francisco, CA, June 1986.

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Conference Presentations: (continued)

- “Linear, nonlinear and adaptive optical elements for neural network implementation,” NSF Workshop on Neural Networks and Neuromorphic Systems, Boston, MA, October 1986 (invited paper).
- “Double phase-conjugate resonator in a gravitational field,” Southwest Conference on Theoretical Physics, Laramie, WY, October 1986 (invited paper).
- “Nonlinear optics and connection machines,” Optical Society of America Annual Meeting, Seattle, WA, October 1986 (invited paper).
- “Double phase-conjugating resonator in a gravitational field,” Annual Meeting of the Optical Society of America, Seattle, WA, October 1986, with R. Saxena.
- “Optical neural networks,” Physics of Quantum Electronics, Snowbird, UT, January 1987 (invited paper).
- “Motion detection using a phase-conjugating interferometer,” Conference on Optoelectronics and Laser Applications in Science and Engineering, Los Angeles, CA, January 1987, with D. Lininger and J. Feinberg.
- “Two-port adaptive optical elements,” JPL Workshop on Neural Network Devices and Applications, Pasadena, CA, February 1987 (invited paper).
- “Linear, nonlinear and adaptive optical elements for neural network implementation,” IEEE International Conference on Robotics and Automation, Raleigh, NC, March 30-April 3, 1987 (invited paper).
- “Neural networks in continuous optical media,” International Quantum Electronics Conference, Baltimore, MD, April 27-May 1, 1987 (invited paper).
- “An optical architecture for neural networks,” Conference on Lasers and Electrooptics, Baltimore, MD, April 27-May 1, 1987, with D. Lininger.
- “Alignment of resonant optical cavities,” Conference on Lasers and Electrooptics, Baltimore, MD, April 27-May 1, 1987, with N. Sampas.
- “Adaptive interconnects for optical neuromorphs: demonstration of a projection operator,” IEEE First International Conference on Neural Networks, San Diego, CA, June 1987.
- “Optical connectionist machines -- present efforts and wishful thinking,” Ninth Annual Cognitive Science Meeting, Seattle, WA, July 1987 (invited paper).
- “Brain-like processing with optics,” Gordon Research Conference, Nonlinear Optics and Lasers, Brewster Academy, Wolfeboro, NH, 1987 (invited paper).

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Conference Presentations: (continued)

- “Operator-lattice treatment of two-beam coupling in photorefractive media,” Conference on Photorefractive Materials, Effects and Devices, Los Angeles, CA, August 1987, with R. Saxena.
- “Spatial light modulators for optical neural networks,” SPIE Conference on Spatial Light Modulators and Applications II, San Diego, CA, August 1987, with M. J. O’Callaghan.
- “Nonlinear optical neural networks,” Neural Computers -- From Computational Neuroscience to Computer Design, Dusseldorf, Germany, September 26-October 3, 1987 (invited paper).
- “Nonlinear optics for adaptive processing,” International Laser Science Conference, Atlantic City, NJ, November 1987, with M. J. O’Callaghan and D. M. Lininger (invited paper).
- “Learning, forgetting, unlearning and obsession in nonlinear optical resonators,” IEEE Conference on Neural Information Processing Systems, Denver, CO, November 1987, with M. J. O’Callaghan and D. M. Lininger.
- “Learning, unlearning, forgetting and obsession in optical resonators,” Opto-Electronic Lasers and Applications in Science and Engineering (OE-LASE), SPIE, Anaheim, CA, January 1988.
- “Neural networks and the dynamics of nonlinear optical resonators,” Hardware Implementations of Neuron Nets, San Diego, CA, January 1988 (invited paper).
- “Brain-like processing with optics,” AAS Annual Meeting, Boston, MA, February 1988 (invited paper).
- “Optical resonators, learning and robots,” International Neural Network Society Annual Meeting, Boston, MA, September 1988 (invited talk).
- “Optical implementation of neural network interconnects,” International Neural Network Society Annual Meeting, Boston, MA, September 1988, with M. J. O’Callaghan.
- “Optical neural networks: a critical review,” OE-Fiber LASE '88, Boston, MA, September 1988 (invited talk).
- “Competitive/cooperative dynamics of a nonlinear optical circuit,” Woods Hole Workshop on Neural Networks, Woods Hole, MA (sponsored by the NAVY) September 28-30, 1988 (invited talk).
- “Competition and cooperation in optical neural networks using gain, loss, and feedback,” OSA Annual Meeting, Santa Clara, CA, October 31-November 4, 1988, with D. M. Lininger.

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Conference Presentations: (continued)

- “Photorefractive crystals as trainable neural network interconnects,” OSA Annual Meeting, Santa Clara, CA, October 31-November 4, 1988, with M. J. O’Callaghan.
- “Dynamics of ring resonator utilizing photorefractive gain and loss,” OSA Annual Meeting, Santa Clara, CA, October 31-November 4, 1988, with P. J. Martin and D. M. Lininger.
- “Bistable resonator utilizing saturable photorefractive gain and loss,” OSA Annual Meeting, Santa Clara, CA, October 31-November 4, 1988, with D. M. Lininger and P. J. Martin.
- “New mirror absorption measurement technique using substrate surface deformation,” OSA Annual Meeting, Santa Clara, CA, October 31-November 4, 1988, with J. I. Webb and C. E. Wieman.
- “Fiber-optic robot limb position sensor with holographic encoding,” OSA Annual Meeting, Santa Clara, CA, October 31-November 4, 1988, with E. J. Knight and J. Feinberg.
- “Competition and cooperation in nonlinear optical neural networks,” International Laser Science Meeting, Lake Tahoe, NV, December 4-5, 1988 (invited talk).
- “Decision making in pattern recognition as the interplay between competition and cooperation in nonlinear optical circuits,” Miami Bio/Technology Winter Symposia, Second Annual Neural Systems Symposium, Coral Gables, FL, February 1989 (invited talk).
- “Competition and cooperation in optical neural networks,” National Academy of Sciences 1st Annual Symposium on Frontiers in Modern Science, Irvine, CA, March 1989 (invited talk).
- “Optical implementations of neural networks,” Workshop on Neural Networks, University of Oklahoma, Tulsa, OK, March 1989 (invited talk).
- “Neural networks and the dynamics of nonlinear optical circuits,” Conference on Lasers and Electrooptics, Baltimore, MD, April 1989 (invited plenary paper).
- “Efficient second-harmonic generation in fibers,” Gordon Research Conference, Wolfboro, NH, July 1989 (invited talk).
- “The possible role of photoinduced charge redistribution in the efficient second harmonic generation in glass fibers,” SPIE, Symposium on Nonlinear Optical Effects, Materials, and Devices, San Diego, CA, August 1989.
- “Photorefractive optical flip-flop,” Optical Society of American Annual Meeting, Orlando, FL, October 1989, with C. Benkert, A. Hermanns and D. Lininger.

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Conference Presentations: (continued)

- “Dynamic bistability in a photorefractive ring oscillator,” Optical Society of American Annual Meeting, Orlando, FL, October 1989, with D. Crouch, D. Lininger and A. Hermanns.
- “Lotka-Volterra dynamics in a photorefractive ring resonator, Physics of Quantum Electronics, Snowbird, UT, January 1990, with C. Benkert.
- “Self-pulsing in a ring resonator with saturable photorefractive gain and loss,” Topical Meeting on Photorefractive Materials, Effects and Devices, Aussois, France, January 1990, with D. M. Lininger, P. J. Martin and D. D. Crouch.
- “Winner-takes-all dynamics and sequential recall in a photorefractive ring resonator,” Topical Meeting on Photorefractive Materials, Effects and Devices, Aussois, France, January 1990, with C. Benkert and A. Hermanns.
- “Competitive and cooperative dynamics in photorefractive optical circuits,” US-USSR Symposium on Nonlinear Optics, Irvine, CA, January 1990 (invited talk).
- “Competitive photorefractive circuits for neural networks, Workshop on Optical Neural Networks, Jackson Hole, WY, February 1990 (invited talk).
- “Multistable and time-sequencing photorefractive ring resonators,” Conference on Nonlinear Dynamics and Optical Systems, Afton, OK, June 1990, with C. Benkert and A. Hermanns.
- “Theory of dynamic bistability and self pulsing of an optical ring circuit having photorefractive gain, loss, and a photorefractive feedback element,” Conference on Nonlinear Dynamics and Optical Systems, Afton, OK, June 1990, with D. D. Crouch and D. M. Lininger.
- “Competitive and cooperative dynamics in photorefractive optical systems,” IEEE LEOS Conference on Nonlinear Optics, Kauai, HI, July 1990, with C. Benkert and A. Hermanns (invited talk).
- “Applications of photorefractive neural networks,” IEEE International Workshop on Photonic Networks, Components and Applications, Montebellow, Quebec, Canada, October 1990 (invited talk).
- “Lotka-Volterra dynamics in a photorefractive ring resonator,” Optical Society of America Annual Meeting, Boston, MA, November 1990, with C. Benkert, V. Hebler, and S. Rehman.
- “The impulse response of two-beam coupling amplifiers,” Optical Society of America Annual Meeting, Boston, MA, November 1990, with A. Hermanns.
- “Threshold characteristics of Hill grating formation,” Optical Society of America Annual Meeting, Boston, MA, November 1990, with B. Guo.

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Conference Presentations: (continued)

- “Fiber optic acoustic spectrum analyzer,” Optical Society of America Annual Meeting, Boston, MA, November 1990, with G. Zhou.
- “Dynamic optical interconnects using mode-multiplexing in optical fibers and volume holograms,” Optical Society of America Annual Meeting, Boston, MA, November 1990, with M. Saffman.
- “A model for second-harmonic generation based on anisotropic photoelectron emission from defect sites,” Optical Society of America Annual Meeting, Boston MA, November 1990 (post deadline presentation), with V. Mizrahi and J. Sipe.
- “Self-organizing demultiplexers and switching for guided wave communications,” Conference on Integrated Photonic Research, Monterey, CA, April 1991, with M. Saffman (invited talk).
- “A model for second-harmonic generation based on anisotropic photoelectron emission from defect sites,” Workshop on Second Harmonic Generation and Photo-sensitivity in Fibers, Quebec City, Quebec, Canada, May 1991.
- “A model for second-harmonic generation based on anisotropic photoelectron emission from defect sites,” Conference on Quantum Electronics and Laser Science, Baltimore, MD, May 1991, with V. Mizrahi and J. Sipe (invited talk).
- “Demultiplexing communication channels with a self-organizing photorefractive circuit,” Conference on Lasers and Electrooptics, Baltimore, MD, May 1991, with M. Saffman and C. Benkert.
- “Self-organizing photorefractive circuits,” Conference on Lasers and Electrooptics, Baltimore, MD, May 1991, with M. Saffman, C. Benkert, V. Hebler, S. Rehman, D. Montgomery and J. Jang (invited talk).
- “A self-organizing photorefractive frequency decoder,” Conference on Lasers and Electrooptics, Baltimore, MD, May 1991, with M. Saffman.
- “Self-organizing photorefractive feature extractor,” Gordon Research Conference on Nonlinear Optics, Wolfboro, NH, July 1991 (invited poster).
- “Self-organizing photorefractive demultiplexer,” Gordon Research Conference on Nonlinear Optics, Wolfboro, NH, July 1991 (invited poster).
- “Self-organizing feature extraction by a photorefractive system,” OSA Topical Meeting on Photorefractive Material, Effects and Devices, Beverly, MA, July 1991, with D. Montgomery, C. Benkert, and M. Saffman.
- “A self-organizing photorefractive demultiplexer,” OSA Topical Meeting on Photorefractive Material, Effects and Devices, Beverly, MA, July 1991, with C. Benkert and M. Saffman.

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Conference Presentations: (continued)

- “Nonlinear dynamics and optical neural networks,” XIV International Conference on Coherent and Nonlinear Optics, '91, St. Petersburg (Leningrad) Russia, September 1991, with C. Benkert, D. Montgomery and M. Saffman (invited talk).
- “Self-organizing photorefractive neural networks,” Workshop on Neural Networks Hardware: Optical and Electronic, Banff, Canada, March 1992.
- “Second-harmonic generation in fibers,” Gordon Research Conference on Nonlinear Optical Effects in Glass, Tilton, NH, June 28 - July 3, 1992 (invited talk).
- “Decision making and self-organization in photorefractive optical systems,” Conference on Physics and Information Sciences, Kyushu Institute of Technology, Kyushu, Japan, July 1992.
- “Chaos and self-organizing optical machines,” 2nd International Conference on Fuzzy Logic and Neural Networks, Iizuka, Japan, July 1992 (invited talk).
- “Dynamic optical systems that learn,” Nonlinear Optics '92, Lahaina, HI, August 1992 (invited talk).
- “Applications of nonlinear optics,” 1992 Optical Society of America Annual Meeting, Albuquerque, NM, September 1992 (invited talk).
- “Self-organizing optical systems,” 1992 Lasers and Electrooptics Society Meeting, Albuquerque, NM, September 1992 (invited talk).
- “Transverse instability of counterpropagating waves in photorefractive media with energy transfer between the pumping waves,” 1993 Gordon Conference on Nonlinear Optics and Lasers, Wolfeboro, NH, August 1993.
- “Spatio-temporal dynamics in a self-imaging photorefractive ring resonator,” 1993 Gordon Conference on Nonlinear Optics and Lasers, Wolfeboro, NH, August 1993.
- “Spatio-temporal processing with photorefractive media,” Topical Meeting on Photorefractive Materials, Effects and Devices, Kiev, Ukraine, August 1993 (invited talk).
- “A photorefractive time delay neural network of speech processing,” Topical Meeting on Photorefractive Materials, Effects and Devices, Kiev, Ukraine, August 1993 (with G. Zhou) (invited talk).
- “Transverse instabilities in photorefractive media,” Topical Meeting on Photorefractive Materials, Effects and Devices, Kiev, Ukraine, August 1993 (with M. Saffman, A. Zozulya and D. Montgomery) (invited talk).
- “Information processing with competitive dynamics,” Symposium on Coherent Image Amplification, London, England, June 1994.

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Conference Presentations: (continued)

- “Atom hoses and waveguides,” Quantum Coherence and Interference in Fundamental and Applied Physics Conference, Crested Butte, CO, August 1994.
- “Optical implementation of parallel computers,” Symposium on Nonlinear Dynamics and Optics, Pisa, Italy, September 1994.
- “A photorefractive optical resonator that learns purely temporal information by itself.” Optical Society of America Annual Meeting, Dallas, TX, October 1994.
- “Inherent information extraction,” Optical Society of America Annual Meeting, Dallas, TX, October 1994.
- “Where do the petals in photorefractive beam fanning come from?” Photorefractive Materials, Effects and Devices Conference, Estes Park, CO, June 1995 (with G. L. Montemezzani, A. A. Zozulya, M. Zgonik, L. Czaia and P. Gunter).
- “Analysis of total internal reflection phase conjugate mirror,” Photorefractive Materials, Effects and Devices, Estes Park, CO, June 1995 (with A. Zozulya and G. Montemezzani).
- “Anisotropic self-focusing in photorefractive media,” Photorefractive Materials, Effects and Devices, Estes Park, CO, June 1995 (with A. A. Zozulya).
- “Fiber atom hoses,” Conference on Lasers and Opto-Electronics (CLEO), Los Angeles, CA, June 1996.
- “Atom hoses and waveguides,” Optical Society of America Annual Meeting, Rochester, NY, October 1996.
- “Progress in photorefractive based processing,” Lasers and Electro-Optics Society (LEOS), November 1996.
- “Optical machines that learn on their own,” Army Research Laboratory, Adelphi, MD, November 1996.
- “Atom hoses,” Lucent Technologies, Holmdel, NJ, December 1996.
- “Atom guiding through hollow-core fibers,” Conference on Lasers and Opto-Electronics, Baltimore, MD, May 1997.
- “Dipolar solitary solutions in photorefractive self-focusing,” Optical Society of America Annual Meeting, Long Beach, CA, October 1997.
- “Signal processing with photorefractives,” Novel Applications of Photorefractives Workshop, West Point, NY, October 1997.
- “Applications of photorefractive systems,” Topical Meeting on Photorefractive Materials, Effects & Devices, Chiba, Japan, June 1997.

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Conference Presentations: (continued)

- “Progress in atom hoses,” 1998 Annual Meeting of the Division of Atomic, Molecular and Optical Physics (DAMOP), Santa Fe, NM, May 1998.
- “Compact photorefractive sensors and systems,” Conference on Lasers and Electro-Optics (CLEO) Europe, Glasgow, Scotland, September 1998.
- “Guiding cold atoms through hollow core,” European Research Conference “Quantum Optics,” Castelveccio di Pascoli, Italy, October 1998.
- “Photorefractive systems that smell, and others that whisper,” International Symposium Trends in Applied Optics, University of Osnabruck, Germany, June 1999.
- “Atom optics with laser cooled atoms guided by magnetic fields from current carrying wires,” Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference 2000 (CLEO/QELS), San Francisco, CA, May 2000.
- “Optically smart antenna arrays,” IMS 2000 - International Microwave Symposium, Boston, MA, June 2000.
- “Photorefractive processing of rf active antenna array signals,” International Photonic Conference, Hsinchu, Taiwan, December 2000.
- “Matrix algebra approach to photorefractive beam coupling,” International Conference on Photorefractive Effects, Materials and Devices, Lake Lawn, WI, July 2001.
- “Optical carrier suppression using two-beam coupling in photorefractive barium titanate,” International Conference on Photorefractive Effects, Materials and Devices, Lake Lawn, WI, July 2001.
- “Optical olfactory sensor with holographic readout,” International Conference on Photorefractive Effects, Materials and Devices, Lake Lawn, WI, July 2001.
- “An optically smart antenna array,” International Conference on Photorefractive Effects, Materials and Devices, Lake Lawn, WI, July 2001.
- “A compact prototype optical processor for x-band arrays,” Microwave Photonics 2001, Long Beach, CA, January 2002.
- “An optically smart x-band antenna array,” Conference on Lasers and Electro-optics, Long Beach, CA, May 2002.
- “Analysis of coherence time of a Bose-Einstein condensate interferometer with optical control of dynamics,” 2007 APS March Meeting, Denver, CO, March 2007, with J. Stickney and A. Zozulya.
- “Status and future of the Optical Science and Engineering Program at UCB,” Industrial Advisory Board Meeting, Boulder, CO, March 2007.

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Conference Presentations: (continued)

- “On-chip Bose-Einstein condensate interferometer with 0.5 mm arm length,” 38th Annual Meeting of the Division of Atomic, Molecular, and Optical Physics of the APS, Calgary, Alberta, Canada, June 2007, with S. P. Segal, Q. Diot and E. Cornell.
- “Portable atom chip vacuum cell for rapid BEC production,” 38th Annual Meeting of the Division of Atomic, Molecular, and Optical Physics of the APS, Calgary, Alberta, Canada, June 2007, with E. Salim, M. Squires, R. Martinez, W. Homgren, S. McBride, S. Lipp, J. DeNatale, R. Mihailovich.
- “Atomtronics: Realizing the behavior of electronic components in ultracold atomic systems,” 38th Annual Meeting of the Division of Atomic, Molecular, and Optical Physics of the APS, Calgary, Alberta, Canada, June 2007, with R. Pepino, M. Holland and J. Cooper.
- “Holographic bind source separation at radio frequencies,” OSA Topical Meeting: Controlling Light with Light/PR 2007, Lake Tahoe, CA, October 2007.
- “Holographic information processing,” OSA Topical Meeting: Controlling Light with Light/PR 2007, Lake Tahoe, CA, October 2007.

Patents:

- Virgil E. Sanders and Dana Z. Anderson, “Isotropic Non-planar Ring Laser,” U.S. Patent 4,247,832.
- Dana Z. Anderson, “Mirror Reflectometer Based on Optical Cavity Decay Time,” U.S. Patent 4,571,085.
- Dana Z. Anderson and Jack Feinberg, “Optical Novelty Filter,” U.S. Patent 4,773,719.
- Dana Z. Anderson and Nicholas M. Sampas, “Optically Differentiating and Adding Passive Ring Laser Gyroscope,” U.S. Patent 4,923,299.
- Dana Z. Anderson and Mark Saffman, “Fiber Optic Communication Method and Apparatus Providing Mode Multiplexing and Holographic Demultiplexing,” U.S. Patent 5,136,666.
- Dana Z. Anderson, Victor Mizrahi and Turan Erdogan, “Method for Forming a Bragg Grating in an Optical Medium,” U.S. Patent 5,327,515. Assigned to AT&T.
- Gan Zhou and Dana Z. Anderson, Inventors, “Method and Apparatus for Photorefractive Pirouette Display and Processing of Analog Signals,” U.S. Patent applied for by Department of the Air Force, Invention No. AFB00023.
- D. Z. Anderson, B. Lee, and W. Swann, “Fiber Bragg Grating Sensor” patent filed.

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D. Z. Anderson and B. Lee, "Strain Measuring Apparatus Grating Method Having a Sensor and a Reference Optical Fiber," U.S. Patent #5,889,901.

D. Z. Anderson, "Gold-based alkali metal getter," provisional patent disclosure, submitted by the TTO to the U.S. Patent Office, June 2007.

D. Z. Anderson, "Double MOT Miniature Atom Chip Vacuum Cell," provisional disclosure submitted to the U.S. Patent Office, June 2007.

D. Z. Anderson, "Channel Cell Ultra-High Vacuum System for Integrated Atom Optics," provisional patent disclosure submitted to the U.S. Patent Office by TTO, June 2007.

Recent Seminars and Colloquia:

"Adaptive processing with nonlinear optics," AT&T Bell Laboratories, Newark, NJ, May 1988.

"Brain-like processing with optics," University of Rochester Institute of Optics, Rochester, NY, January 1989.

"Brain-like processing with optics," University of Nevada at Las Vegas, Las Vegas, NV, April 1989.

"Optical neural networks," A lecture series at the 14th International Nathiagali Summer College, Islamabad, Pakistan, June 8-16, 1989.

"Efficient second-harmonic generation in fibers," University of Arizona, Tucson, AZ, August 1989.

"Adaptive processing with nonlinear optics," Spectra-Physics Fellows Retreat, Santa Cruz, CA, October 1989.

"Brain-like processing with optics," University of Wyoming, Laramie, WY, November 1989.

"Adaptive processing with nonlinear optics," University of Toronto, Toronto, Ontario, November 1989.

"Adaptive processing with nonlinear optics," Colorado State University, Fort Collins, CO, December 1989.

"Second-harmonic generation in fibers," University of Colorado Physics Colloquium, Boulder, CO, April 1990.

"Processing with photorefractive optics," delivered at four physics institutes in Moscow, Lenigrad and Kiev, USSR, September 11-21, 1990.

"Second-harmonic generation in fibers," Air-Force Weapons Laboratory, Kirtland AFB, Albuquerque, NM, November 1990.

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Recent Seminars and Colloquia: (continued)

- “Adaptive processing with nonlinear optics,” University of Oklahoma, Stillwater, OK, October 1990.
- “Decision making and adaptation in nonlinear optical systems,” Michigan State University, Lansing, MI, January 1991.
- “Adaptive processing with photorefractive systems,” Purdue University, Purdue, IN, March 1991.
- “Adaptive processing with photorefractive systems,” British Telecom Research Laboratories, Ipswich, England, April 1991.
- “Solid-state laser gyroscopes,” Sandia National Laboratories, Albuquerque, NM, June 1991.
- “Nonlinear dynamics in photorefractive systems,” Thomson CSF, Orsay, France, September 1991.
- “Adaptive processing with photorefractive systems,” Institute of Optics, Orsay, France, October 1991.
- “Adaptive processing with photorefractive systems,” Technical University of Denmark, Lyngby, Denmark, October 24-25, 1991 (two lectures).
- “Decision making and self-organization in photorefractive systems,” Stanford University, Stanford, CA, December 1991.
- “Optical machines that learn by themselves,” AT&T Bell Labs, Newark, NJ, February 1992.
- “Adaptation, decision making and self-organization in photorefractive systems,” University of Iowa, Iowa City, IA, April 1992.
- “Optical machines that learn on their own,” Physics Department, New Mexico State University, Las Cruces, NM, November 1992.
- “Optical machines that learn on their own,” University of New Mexico Institute for Advanced Study, Albuquerque, NM, November 1992.
- “Spatio-temporal dynamics in photorefractive systems,” University of Arizona, Tucson, AZ, February 1993.
- “Decision making and self-organization in photorefractive systems,” Argonne National Laboratory, Argonne, IL, May 1993.
- “Optical machines that learn on their own,” National Institute of Standards and Technology, Gaithersburg, MD, September 1993.

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Recent Seminars and Colloquia: (continued)

- “Optical machines that learn on their own,” Texas A&M, College Station, TX, April 1995.
- “Optical machines that learn on their own,” University of Nebraska, Lincoln, NB, March 1996.
- “Optical machines that learn on their own,” Colorado School of Mines, Golden, CO, April 1996.
- “Computational properties of two-beam coupling,” California Institute of Technology, Pasadena, CA, April 1996.
- “Atom hoses and waveguides,” Stanford University, Stanford, CA, May 1996.
- “Atom hoses and waveguides,” Lucent Technologies, Newark, NJ, February 1997.
- “Applications of photorefractive sensor systems,” Army Research Office workshop on Integrated Sensor Science, Raleigh, NC, February 1997.
- “Optical sensors for touch and hearing,” Army Research Office Integrated Sensory Science Workshop, June 1998.
- “Optical machines that learn on their own,” University of Puerto Rico, Mayaguez, Puerto Rico, October 1999.
- “Integrated atom optics,” Physics Dept. Colloquium, University of Wisconsin, Madison, WI, March 2002.
- “Integrates atom optics,” Optical Sciences Center Colloquium, University of Arizona, Tucson, AZ, April 2002.
- “Integrating the ultracold on a chip,” Georgia Tech Quantum Institute Integrated Atomic Systems Workshop, Atlanta, GA, November 2007 (invited talk).
- “Integrating the ultracold: making things small,” Symposium on Coherent Optical Science, Univ. of Electro-Communications, Chofu, Japan, December 2007 (invited talk).
- “Integrated ultracold atom optics: a tutorial,” Army/NASA Workshop on Atom Interferometry, Redstone Arsenal, Huntsville, AL, January 2008 (invited talk).
- “Integrated atom optics,” Office of Naval Research Atoms on a Chip Workshop, Arlington, VA, March 2008 (invited talk).