Vita

Dana Z. Anderson

Degrees:

BSEE 1975, Cornell University
Ph.D. Physics/Quantum Optics 1981, University of Arizona, Research Advisor Marlan O. Scully. 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, 1991
R. W. Wood Prize, Optical Society of America, 1994
Fellow, American Physical Society, 2000
Alexander von Humboldt Award, 2001
Glenn L. Murphy Chair, College of Engineering and Applied Sciences, University of Colorado, 2005 - Present
University of Colorado Company of the Year Award, ColdQuanta Inc. 2014
CO-Labs Governor's Award for Foundational Research 2014
Participant, White House Summit on Advancing American Leadership in Quantum Information Science (QIS), The White House, Sept. 24, 2018.
Willis E. Lamb Award, Physics of Quantum Electronics, 2022

Appointments:

Member, Board of Directors, Quantum Economic Development Consortium (QED-C), Sept 2018 – Present.
JILA Institute Chair Feb 2016 – Dec. 2017
JILA Institute Associate Chair 2015 – 2016
Glenn Murphy Chair, College of Engineering and Applied Science, University of Colorado, 2005 – present
Chief Executive Officer, ColdQuanta Inc., 2016 – 2019
Chief Technical Officer, ColdQuanta Inc., 2007 – present
Director, Optical Science and Engineering Program, University of Colorado, 1998 – present
Professor, Department of Physics, University of Colorado, 1995 – present
Associate Professor, Department of Physics, University of Colorado, 1989 – 1995
Fellow, JILA, University of Colorado and National Institute of Standards and Technology, 1985– present
Assistant Professor, Department of Physics, University of Colorado, 1984 – 1989
Member, Joint Institute for Laboratory Astrophysics, University of Colorado and National Bureau of Standards, 1984 – 1985
Lecturer in Physics, California Institute of Technology, 1983 – 1984
Consultant, Rockwell International Corp. Marine Systems Division, 1982 – 1984
Research Fellow in Physics, California Institute of Technology, 1981 – 1984
Consultant, Litton Industries Guidance and Control Division, 1981 – 1982
Research Associate, University of New Mexico, 1980 – 1981
Physicist, Max-Planck Institute, Garching, W. Germany (Summer) 1980
Engineering Specialist, Litton Industries (Summer) 1978, 1979

Engineer in High Energy Physics, Cornell University (Summer) 1975
Engineer in Infrared Astronomy, Cornell University, 1973-1974

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

Editorial Activities (cont.)

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

1. 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 **167** (1979) (invited paper).

2. 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 **167** (1978).

3. 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).

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

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

6. 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).

7. 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).

8. 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).

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

10. D. Z. Anderson, "Coupled resonators employing phase conjugation and ordinary mirrors," Opt. Lett. **9**, 417 (1984).

11. M. Hereld and D. Z. Anderson, "Beat frequency locking in passive ring laser gyroscopes," in *The Physics of Optical Ring Gyros*, SPIE Vol. 487, 33 (1984).

12. D. Z. Anderson, "Alignment of resonant optical cavities," Appl. Opt. **23**, 2944 (1984).

13. 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).

14. D. Z. Anderson, "Coherent optical eigenstate memory," Opt. Lett. **11**, 56 (1986).

15. D. Z. Anderson, "Optical resonators for associative memory," in Nonlinear Optics and Applications, SPIE **613**, 85 (1986).

16. 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).

17. D. Z. Anderson, "Optical gyroscopes," Sci. Am. **254**, 94 (1986).

18. D. Z. Anderson, "Rotation, gyroscopes and general relativity," Laser Topics **8**, 7 (1986).

19. 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. **B4**, 164 (1987).

20. D. Z. Anderson, D. M. Lininger and J. Feinberg, "Optical tracking novelty filter," Opt. Lett. **12**, 123 (1987).

21. D. Z. Anderson and M. C. Erie, "Resonator memories and optical novelty filters," Opt. Engineering **26**, 434 (1987) (invited paper).

22. D. Z. Anderson, "Optical resonators and neural networks," in Neural Networks for Computing, John S. Denker, Editor. AIP Conference Proceedings 151 (AIP Press, New York, p. 12, 1986).

23. D. Z. Anderson, "Optical resonators, mode competition and associative memory," Optics News **13**, 16 (1987) (invited paper).

24. 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).

25. D. Z. Anderson and D. M. Lininger, "Dynamic optical interconnects: volume holograms as optical two-port operators," Appl. Opt. **26**, 5031 (1987) (invited paper).

26. M. J. O'Callaghan and D. Z. Anderson, "Spatial light modulators for optical neuromorphs," Proc. SPIE Conference on Spatial Light Modulators and Applications II, SPIE **825**, 121 (1987).

27. D. Z. Anderson, "Nonlinear optical neural networks: Dynamic ring oscillators," *Neural Computers*, R. Eckmiller and C. von der Malsberg, editors, Springer-Verlag, New York, pp. 417-424 (1988) (invited paper).

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31. D. Z. Anderson and J. Feinberg, "Optical novelty filters," IEEE J. Quant. Electron. **25**, 635 (1989) (invited paper).

32. D. M. Lininger, P. J. Martin and D. Z. Anderson, "Bistable ring resonator utilizing saturable photorefractive gain and loss," Opt. Lett. **14**, 697 (1989).

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35. D. Z. Anderson, "Competitive and cooperative dynamics in nonlinear optical circuits," in An Introduction to Neural and Electronic Networks (S. V. Zornetzer, L. J. Davis and C. Lau, Eds., Academic Press, 1990), pp. 349-362 (invited chapter).

36. 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).

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Recent Invited Talks 3/1/21 – 1/15/22

1. "Cold atom inertial sensor packaging", IEEE Inertial Sensors 2021, Virtual, (Mar. 23, 2021).

2. "Quantum in the kitchen" Austin Quantum Lunch meeting, Austin TX, (May 17, 2021).

3. "Matter waves, matterons, and the atomtronic transistor oscillator", Atomtronics Abu Dhabi 2021 Conference, Virtual, (May 31, 2021).

4. "Matter waves, matterons, and the atomtronic transistor oscillator", Quantum Science Center Summer School, Virtual, (May 20, 2021).

5. "Quantum in the kitchen", AFRL Annual Quantum Information Science Workshop, Virtual, (Jun. 22-24, 2021).

6. "Quantum in the kitchen", European Time and Frequency Symposium, Virtual, (July 12-14, 2021).

7. "Making quantum a reality", Air Force xTech Search, Washington D.C., (Sept. 1, 2021)

8. "Quantum from cloud to kitchen", IEEE Quantum Week, Virtual, (Oct. 17 – 22, 2021)

9. "Matterwaves, matterons, and the atomtronic transistor oscillator," Texas A&M Physics Seminar, College Station, TX, (Oct. 26, 2021).

10. "Matterwaves, matterons, and the atomtronic transistor oscillator," UT Dallas Physics Colloquium, Dallas, TX, (Oct. 27, 2021).

11. "Quantum in the kitchen, Netherlands Building a Trusted Community for Quantum Technology Workshop, Delft Netherlands, (Nov 19-22, 2021).

12. "Oscillatory matter-wave fields", Physics of Quantum Electronics Conference 2022, Snowbird UT, (Jan. 10 – 15, 2022)

13. “Quantum in space and in the kitchen” NASA Quantum Industry Seminar, Virtual, (Dec. 17, 2021)