

Glenn Eric Johnson

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Dr. Johnson was raised in San Gabriel and Alhambra, California. At Alhambra high school, he was a science medalist recognized by the Southern California Industry-Education Council. Dr. Johnson attended Harvey Mudd College in Claremont, California as a California State Scholar and graduated with a B.S. in 1972 majoring in physics. At Harvey Mudd, he was recognized with the Thomas Benjamin Brown Memorial Award for outstanding senior physics research for a polarizing interferometer demonstrating distinctions between classical and quantum mechanics. Dr. Johnson subsequently attended the University of Maryland at College Park, Maryland receiving a M.S. in physics in 1976 and a Ph.D. in physics in 1978 under his advisor Dr. Daniel Fivel. His masters research paper was “Notes on Schrödinger’s Cat and the Formal Theory of the Many-worlds Interpretation of Quantum Mechanics” and his dissertation was “Model Green’s functions and the Axioms of Quantum Field Theory.” Dr. Johnson attended the 1976 Cargèse Summer Institute on New Developments in Quantum Field Theory and Statistical Mechanics in Corsica, France.

Dr. Johnson’s professional interests are mathematical physics, particularly the foundations of relativistic quantum physics, algorithms, simulation of radar and communication systems, and applications to issues of national security. Dr. Johnson’s professional pursuits included systems analysis, the limits of radar and communication systems performance, signal processing, and probability analysis.

From 1979 until 1982, Dr. Johnson was an Engineering Systems Analyst with Texas Instruments in Dallas, Texas. Dr. Johnson identified sensors for the terrain following/terrain avoidance (TF/TA) function in the USAF Low Altitude Navigation and Targeting Infrared for Night (LANTIRN) procurement, and executed performance appraisals for the F-111 electronic counter-countermeasure (ECCM) upgrade study and design studies for the long range combat aircraft (LRCA, B-1) proposals. Dr. Johnson was principle contributor to a ground moving target indication and location (GMTI/L) signal processing study, test and evaluation using Texas Instruments’ airborne TIMPR radar test bed. He developed signal and receiver simulations for the USN HARPOON anti-ship missile seeker, analyzed digital MTI filters for the FAA airport surveillance radar (ASR-8), supported an effort to automate the FPS-19 early warning radar, and developed and tested an image enhancement process for an internally funded millimeter wave (MMW) imaging radiometer.

From 1985 until July of 1991, Dr. Johnson was with the Mission Research Corporation in Santa Barbara, California. His responsibilities included study of expendable countermeasures for the USAF, development of high fidelity electronic combat (EC) engagement algorithms for deployment in live USN pilot training, the insertion of AI into EC reaction systems (CMAT SBIR phase I, II programs), and program management. Dr. Johnson was principle contributor to new developments within the USAF SCARE (Simulation of Countermeasures, Aircraft, Radar Encounters) simulation. For the Defense Nuclear Agency, he assessed the capabilities of

over-the-horizon-backscatter (OTH-B), airborne, and space-based radars against nuclear burst clutter to perform air defense roles for the Airborne Defense Initiative (ADI).

In August 2010, Dr. Johnson retired as Technical Director of the National Systems Business Unit of TASC in Chantilly, Virginia. While TASC was owned by Northrop-Grumman, Dr. Johnson was a Northrop-Grumman IT Technical Fellow. His responsibilities included direction of TASC IRAD projects and program support to NSBU's federal security agency customers. He provided advice to advanced plans staff of procurement offices on mission satisfaction, insertion of advanced technology, community technical coordination, and training of US government and mission partner personnel at deployment sites. Dr. Johnson shared the 1999 TASC President's award, 2001 and 2003 Director's Team Awards, and four challenge coins. While a member of the technical staff, Dr. Johnson was principal investigator for an IRAD program for handwritten character recognition algorithms. Dr. Johnson was a member of the technical staff at TASC from 1982 until 1985, and rejoined TASC in 1991 until his retirement.

Selected Publications:

1. G.E. Johnson, "Consistent Descriptions of Quantum Fields", *Reports on Mathematical Physics*, Vol. 80(2), 2017, p. 193.
2. G.E. Johnson, "Are strings the aether of our time?", June 2015, arXiv:quant-ph/1506.05361.
3. G.E. Johnson, "Classical approximations of relativistic quantum physics", April 2015, arXiv:quant-ph/1604.07654.
4. G.E. Johnson, "Introduction to quantum field theory exhibiting interaction", Feb. 2015, arXiv:math-ph/1502.07727.
5. G.E. Johnson, "Measurement and self-adjoint operators", May 2014, arXiv:quant-ph/1405.7224.
6. G.E. Johnson, "Fields and Quantum Mechanics", Dec. 2013, arXiv:math-ph/1312.2608.
7. G.E. Johnson, "Massless Particles in QFT from Algebras without Involution", May 2012, arXiv:math-ph/1205.4323.
8. G.E. Johnson, "Algebras without Involution and Quantum Field Theories", March 2012, arXiv:math-ph/1203.2705.
9. G.E. Johnson, "Interacting quantum fields", *Rev. Math. Phys.*, Vol. 11, 1999, p. 881-928 and Vol. 13, 2001, p. 601-602.
10. G.E. Johnson, R.A. Muir, J.M. Scanlan, W.M. Steedly, "The Sliding Frequency-Domain Adaptive Filter Algorithm Amenable to Parallel Implementation", *Proceedings of the 29th Asilomar Conference on Signals, Systems, and Computers*, October 30 -November 1, 1995, Pacific Grove, CA.
11. G.E. Johnson, R.A. Muir, J.M. Scanlan, W.M. Steedly, "Practical Comparison of Adaptive Filter Algorithms", *Proceedings of the 28th Asilomar Conference on Signals, Systems, and Computers*, October 31-November 2, 1994, Pacific Grove, CA.
12. G.E. Johnson, "Constructions of Particular Random Processes", *Proceedings of the IEEE*, vol. 82, no. 2, February 1994.
13. G.E. Johnson, "Mimic Nets", *IEEE Transactions on Neural Networks*, vol. 4, no. 5, September 1993.

14. G.E. Johnson, G. Chapman and R. Burdick, "Automated Threat Response Recommendation in Environments of High Data Uncertainty Using the Countermeasure Association Technique (CMAT)", *AGARD Conference Proceedings 499*, September 1991.
15. G.E. Johnson, D. Jaecks and T. Old, "Chaff Simulation: Effectiveness, Simulation and Measurement of Passive Expendables", WRDC- TR-89-1142, January 1990 (S/WN/NF).
16. G.E. Johnson, "Long Range Radar Performance Degradation Due to Nuclear Clutter Effects", DNA-TR-88-243, Oct 1988 (S/FRD).
17. G.E. Johnson, "Image Processing for Increased Resolution", *Texas Instruments Equipment Group Engineering Journal*, Vol. 5, No. 5, Sept 1982.
18. G.E. Johnson, and D.I. Fivel, "Consequences of Weakening the Positivity Property of Wightman Quantum Field Theories", *J. Math Physics*, 21(4), April 1980.