Curriculum Vitae

A. Martin Buoncristiani
Professor of Physics

Department of Physics, Computer Science and Engineering
Christopher Newport University
50 Shoe Lane, Newport News, VA 23606
Voice Phone: (757) 594-7192
FAX Phone: (757) 594-7919
e-mail: martinb@pcs.cnu.edu

Home: 310 Charity Lane
Newport News, VA 23602
(757) 269 - 4988

I. Education

1956 -1960	University of Santa Clara, Santa Clara, CA. 95053	B.S. in Physics
1960 -1966	University of Notre Dame, Notre Dame, IN. 46556	Ph. D. in Physics

II. Teaching and Research Positions

1966 -1974	The Ohio State University, Columbus OH 43210 Assistant Professor of Mathematics Adjunct Professor, College of Engineering, 1967-1974.
1970 - 1974	The Air Force Institute of Technology, Wright-Patterson AFB, Dayton, OH, Adjunct Professor of Mathematics
1974 -	Christopher Newport University, Newport News, VA 23606 Associate Professor of Physics, 1974 -1979 Professor of Physics, 1979 - 2005 Department Chairman 1977-1980 and 2002 - 2005 Director of Graduate Studies, 1990-1992 Director of Economic Advancement, 1995- 1996 Professor of Physics, Emeritus, from 2005
1978-1986	NASA Langley Research Center, Hampton, VA 23665 Contract Research Scientist: Space Sciences Division; Materials Characterization and Instrumentation Group; Laser Technology and Applications Branch.
1986-1988	National Research Council, Senior Resident Research Associate NASA Langley Research Center
1988- 1998	NASA Langley Research Center, Senior Research Associate Laser Technology and Applications Branch and Non-Destructive Measurement Science Branch
1998- 2005	Director, Laser and Photonics Laboratory, Applied Research Center Jefferson Laboratory, Newport News, VA
2001- 2005	Director, CNU activites at the Applied Research Center

III. Achievements:

In Education:
_ Consistently high student evaluations spanning more than 40 years of graduate and undergraduate teaching. Formal acknowledgment of distinguished teaching from The Ohio State University . CNU Outstanding Faculty Award, 1988-89.

_ Record of successful academic program development. Most recently at Christopher Newport University this includes work on the development of an Applied Physics major, institution of graduate studies at the University and the establishment of a supported research effort with the NASA Langley Research Center.

_ Sustained effort in the assessment of needs of science education in secondary schools including the early advocacy of the use of computers, development of special courses for teachers and programs for gifted and talented students 1974- 1978.

_ Chairman, Physics Department, Christopher Newport University 1977- 1980. Initiated the effort to establish a Physics degree program. Chair, Department of Physics, Computer Science and Engineering since 2002.

_ Member, Virginia State Department of Education Committee on Academic Computing 1978-1979.

_ Director, The Center for Science and Ethics in Public Policy, Christopher Newport University 1975- -- ; Founding member of the Group on Foreign Affairs and Technology at the Mershon Center, The Ohio State University 1970-1974; participant in the Community Outreach Program of Old Dominion University 1986-1989; as part of a long term interest in Science and Society.

_ Member, Faculty Senate, College of Arts and Sciences, The Ohio State University 1970-1972.
Adjunct Faculty, College of Engineering, The Ohio State University 1967-1974. Member Faculty Senate of Christopher Newport University 1990-1992.

Achievements in Science:
_ Study of the propagation of light in complex media. Laser metrology. 1997 -

_Study of the propagation of light in non-homogeneous media, development of a model describing laser inducerd fluorescence in an optical fiber and the effects of reflection from a Bragg grating written in to an optical fiber. 1992-97

_ Determination of the energy transfer among optically active ions in solids, especially involving Chromium, Thulium and Holmium doped into insulating garnet crystals. First demonstration of the approach to equilibrium among excited ions in a solid1988- 94

_ Study of the quantum optical properties of lasers in the micro-gravity environment of space. 1988-92

_ Characterization of the optical properties of Ti^{3+} :Al_2O_3 and analysis of the use of this material as a tunable Solid State Laser.

_ Development of a new technique for calculating the transport characteristics in one dimension with applications made to electron transport in semiconductors, backscattering of ultrasonic waves in inhomogeneous solids and the transport of photons through optically active media. 1980-1988.

_ Analysis of the thermodynamic efficiency limiting energy conversion of black-body radiation by quantum and thermal devices. Analysis of photo-electrochemical solar cells for use as energy conversion devices in space; responsible for the first experimental amorphous silicon solar cells in space.1978-1983.

IV. Publications: A. Refereed Journal Articles

1. A.M.Buoncristiani and P.C.DeCelles, Mass Splitting Among Meson Octets, Il Nuovo Cimento, vol. 5 A, no. 4, pp. 631-643 (1971).

2. A.M.Buoncristiani, An Algebra of the Yang-Mills Field, J.Math.Phys. vol. 14, no.7, pp.849-854 (1973).

3. A.M.Buoncristiani, The Cayley Algebra and Linear Field Equations, Utilitas Mathematica, vol. 6, pp. 23-44 (1974).

4. A.M.Buoncristiani, On Analytic Functions of Quaternion Variables, Pi Mu Epsilon Journal, vol. 6, no. 1, pp. 8-11 (1974).

5. A.M.Buoncristiani, A Discussion of a Generalized Einstein Formula, The Matrix and Tensor Quarterly, vol. 25, no. 3, pp.100-101 (1975).

6. D.L.Brito, A.M.Buoncristiani and M.D.Intrilligator, A New Approach to the Nash Bargaining Problem, Econometrica, vol. 45, no. 5, pp.1163-1172 (1977).

7. J.Thomchick and A.M.Buoncristiani, An Alternative Approach to Charge Transport in Semiconductor Electrodes, J.Appl.Phys., vol. 51, no.12, pp. 6265-6272 (1980).

8. J.Thomchick and A.M.Buoncristiani, Field Dependent Transport Through the Depletion Layer of a Semiconducting Electrode, J.Appl.Phys., vol. 53, no. 12, pp. 7296-7303 (1981).

9. A.M.Buoncristiani, C.E.Byvik and B.T.Smith, Thermodynamic Limits to the Conversion of Blackbody Radiation by Quantum Systems, J.Appl.Phys., vol. 53, no. 8, pp. 5382-5386 (1982).

10. A.M.Buoncristiani, C.E.Byvik and B.T.Smith, Evaluating Energy Conversion, NASA Tech. Briefs, vol. 7, no. 2, p. 150 LAR 129480 (1982).

11. A.M.Buoncristiani, A Vector Representation of Spinors, The Matrix and Tensor Quarterly, vol. 32, no. 3, pp. 90-92 (1982).

12. A.M.Buoncristiani and C.E.Byvik, Semiconductor Photo-electrochemistry, NASA Technical Publication, TP-2088, 93 pages (1983).

13. A.M.Buoncristiani and J.Thomchick, Global Flux Conservation in One-Dimension, Applied Physics Comm., vol. 2, no. 3, pp. 157-182 (1983).

14. C.E.Byvik, A.M.Buoncristiani and B.T.Smith, Limits to Solar Power Converision Efficiency with Applications to Quantum and Thermal Systems, Journal of Energy, vol. 7, no. 6, pp. 581-588 (1983).

15. A.M.Buoncristiani and B.T.Smith, Backscatter of Acoustic Signals from Inhomogeneities in Solids, Review of Progress in Quantitative Non-Destructive Evaluation, eds. D.O.Thompson and D.E.Chimenti, Vol. 5 A, pp 109-115, Plenum Press, New York (1985).

16. C.E.Byvik, A.M.Buoncristiani and R.V.Hess, Absorption and Fluorescence of Alexandrite and of Titanium in Sapphire and Glass, in Tunable Solid State Lasers for Remote Sensing, eds R.L.Beyer, E.K.Gustafson and R.Trebino, pp. 82-85 Springer-Verlag, Berlin (1985).

17. A.M.Buoncristiani and J.Thomchick and C.E.Byvik, An Alternative Method for Calculating Charge Transport in Semiconductors , NASA Tech Briefs, vol. 9, no. 3, pp. 92-93 LAR 13201 (1985).

18. C.E.Byvik and A.M.Buoncristiani, Analysis of Vibronic Transitions in Titanium Doped Sapphire Using the Temperature Dependence of the Fluorescence Spectrum, Journal of Quantum Electronics, vol. QE-21, no. 10, pp. 1619-1624 (1985).

19. C.E.Byvik, A.M.Buoncristiani, S.R.MacMurray and M.Kokta, Optical and Mass Spectroscopic Analysis of Titanium Doped Sapphire Crystals, in Tunable Solid State Lasers, eds. A.B.Budgor, L. Esterowitz and L.G.DeShazer, pp. 242-248, Springer-Verlag (1986).

20. A.M.Buoncristiani and C.E.Byvik, A New Technique for the Spectroscopic Analysis of Insulating Crystal Fibers, in Excited State Processes in Condensed Matter, J. Luminescence, vol. 40 & 41, pp. 869-870 (1988).

21. R.Caton, R.Selim, A.M.Buoncristiani and C.E.Byvik, Rugged Low Resistance Contacts to High Tc Superconductor $YBa_2 Cu_3 0_x$, Applied Physics Letters, vol. 52, no.12, pp. 1014-1016, (1988) .

22. Huimin Liu, Ki-Soo Lim, Weiya Jia, E. Strauss, W.M.Yen, A.M.Buoncristiani and C.E.Byvik, Effects of Tensile Stress on the R-Lines of Cr^{3+} in a Sapphire Fiber, Optics Letters, vol. 13, No. 10, pp. 931-933 (1988).

23. A.M.Buoncristiani and C.E.Byvik, A New Technique for the Spectroscopic Analysis of Insulating Crystal Fibers, J. of Appl. Physics, vol. 64, no. 8, pp. 4239-4240 (1988).

24. U.O.Farrukh, A.M.Buoncristiani and C.E.Byvik, An Analysis of the Temperature Distribution in Finite Solid State Laser Rods, IEEE J. of Quantum Electronics, vol. 24, no. 11, pp. 2253-2263 (1988).

25. J.J.Swetits and A.M.Buoncristiani, On Shilnikov Instabilities in Laser Systems, Physical Review A, Vol. 38. no. 10 pp 5430-32 (1988).

26. S.Albin, A.D.Cropper, L.C. Watkins, C.E.Byvik and A.M.Buoncristiani, Laser Damage threshold of Diamond Films, Optical Engineering, vol. 28, no. 3, pp 281-285 (1989).

27. A.M.Buoncristiani, L.F.Roberts and J.Swetits, Model of an End-Pumped Injection Seeded Solid State Laser, Mathematical and Computer Modeling, Vol.12 , No. 3, pp. 303-312 (1989).

28. G.Armagan, B.DiBartolo and A.M.Buoncristiani, Spectroscopic Investigation of the Cr to Tm Energy Transfer in Yttrium Aluminium Garnet, J.Luminescence, Vol. 44, No. 3, pp. 129-139 (1989).

29. G.Armagan, B.DiBartolo and A.M.Buoncristiani, Kinetics and Microparameters of the Cr to Tm Energy Trasnsfer in Yttrium Aluminium Garnet, J.Luminescence, Vol. 44, No. 3, pp. 141-148 (1989).

30. B.T.Smith, J.S.Heyman, A.M.Buoncristiani, E.D.Blodgett, J.G.Miller and S.M.Freeman, Correlation of the Deply technique with the Ultrasonic Imaging of Impact Damage in Graphite/Epoxy Composites, Materials Evaluation, vol. 47, No. 12, pp 1408-1416 (1989).

31. R.Selim, R.Caton, A.M.Buoncristiani, C.E.Byvik, R.Edahl and S.Wise, Low-Resistance Noble Metal Contacts to High Temperature Superconductors, J. Appl. Physics, vol. 67, no. 1, pp. 376-378 (1990).

32. G.Armagan, A.T.Inge,A.M.Buoncristiani and B.DiBartolo, Energy Transfer Dynamics of Luminescent Ions in Solids Using Kinetic and Spectroscopic Data, J. Luminescence, vol. 45, pp. 360-363 (1990).

34. R.Selim, R.Caton, A.M.Buoncristiani, C.E.Byvik, R.Edahl and S. Wise, Low-resistance Ag and Au Contacts to the High Tc Superconductors, J.Appl. Phys., vol. 67, no. 1, pp.376-378 (1990).

35. A.M.Buoncristiani and C.E.Byvik, Spectroscopic Analysis of Insulating Crystal Fibers, NASA Tech Briefs (LAR-13831).

36. R.Caton, R.Selim, A.M.Buoncristiani and C.E.Byvik, The Effect of Irradiation obn $YBa_2Cu_3O_x$ with Gold Bead Contacts, J. Appl. Physics, vol. 67, no. 12, pp. 7278-7472 (1990).

37. G.Armagan, A,M.Buoncristiani, and B. DiBartolo, Energy Transfer and Thermalization in YAG: Tm,Ho, Journal of Luminescence, vol. 48, pp 171,174 (1990).

38. A.M.Buoncristiani, G.Armagan, B.DiBartolo and J.Swetits, Energy Transfer in Cr, Tm:YAG, in Advances in Nonradiative Processes in Solids, Plenum Press, pp. 387-396, New York (1991).

39. G.Armagan, A.M.Buoncristiani and B.DiBartolo, Excited State Dynamics of Thulium ions in Yttrium Alluminium Garnet, Optical Materials, vol. 1, pp. 11,20, (1992).

40. R.Caton, R.Selim, A.M.Buoncristiani and C.E.Byvik, Rugged Low Resistance Contacts to High Temperature Superconductors, NASA Tech Briefs, vol. 16, no. 3, pp.58-59 (1992).

41. A.M.Buoncristiani, R.S.Rogowski and W.M.Yen, Activated Crystalline Fibers for Sensors, Fiber-Optic Sensor Based Smart Structures, Inst. of Physics Publishing, Ltd Bristol, Eng. pp. 13-17 (1992).

42. A.M.Buoncristiani and S.R.Sandford, Excited State Interactions in Stabilized Lasers, in Optical Properties of Excited States in Solids, ed. B.DiBartolo, pp. 591-600 Plenum Press, New York (1993).

43. T.G.Wangler, J.J.Swetits and A.M.Buoncristiani, Temporal Model of an Optically Pumped, Co-doped solid State Laser, Mathl. Comput. Modelling, Vol.17, No. 6,pp. 67-82 (1993).

44. A.Bryant, S.Albin A.M.Buoncristiani and R.S.Rogowski, Luminescence of Eu3+:Y2O3 Powder Thermally Diffused into an Optical Fiber for Distributed Thermal Sensing, OSA Proceedings, Inagural Forum for the Research Center for Optical Physics, Vol. 19, pp. 82-87 (1993).

45. M.W.Hooker, S.A.Wise, R.Selim, R. Caton and A.M.Buoncristiani, High-Tc Leads for Sensing Applications, J. of Cryogenics, Vol. 34, No. 2, pp. 119-122 (1994)

46. A.M.Buoncristiani, G.Armagan and A.A.Kaminskii, Computer Modeling of Nonlinearities, in Nonlinear Spectroscopy of Solids, ed. B.DiBartolo, pp. 561-570 (1994).

47. Di Bartolo, B.; Armagan, G.; Buoncristiani, M., Spectroscopy and dynamics of energy transfer processes in laser-type solids, Optical Materials, vol.4, no.1, p. 11-23 (1994)

48. Kaminskii, A.A.; Boulon, G.; Buoncristiani, M.; Di Bartolo, B.; Kornienko, A.; Mironov, V., Spectroscopy of a new laser garnet $Lu_3Sc_2Ga_3O_{12}:Nd^{3+}$: intensity luminescence characteristics, stimulated emission, and full set of squared reduced-matrix elements $||Ut||^2$ for Nd^{3+} ions, Physica Status Solidi A, vol.141, no.2, p. 471-94, (1995).

49. S.Albin, A.C.Lavarias, J.B.Cooper, and A.M.Buoncristiani, Thermal Effects on the Optical Properties of Eu3+ for a Fiber Optic Temperature Sensor, Recent Res. in Optical Engineering, Vol. 1 pp. 37-56.(1996).

50. C.O.Egalon, A.M.Buoncristiani and R.S.Rogowski, Asymptotic approximation and First Order Correction of the Coupled Mode Equation, Optical Engineering, Vol 37, No. 7, pp.1930-34 (1997).

B. Published Proceedings and Chapters in Books.

1. A.Bohm, Rigged Hilbert Space and the Mathematical Description of Physical Systems, Lecture Notes by A.M.Buoncristiani and C.M.Andersen for Lectures in Theoretical Physics, vol. IX A, eds. W.E.Brittin, A.O.Barut and M.Guenin, pp 255-317, Gordon and Breach ,New York (1966).

2. A.M.Buoncristiani and G.R.Webb, Applications of Catastrophe Theory in Mechanics, Advances in Engineering Science vol. 2, NASA CP-2001 p. 747-756 (1977).

3. A.M.Buoncristiani, Charge Transport in a Semiconductor Electrode, Extended Abstracts of The Electrochemical Society, vol. 79-1, pp. 616-617 (1979).

4. A.M.Buoncristiani and J.Thomchick, The Flux Method Applied to Excess Carrier Transport in Solar Cells, The Conference Record 16th IEEE Photovoltaic Specialists Conference pp.485-488 (1983).

5. A.M.Buoncristiani, C.E.Byvik and B.T.Smith, Thermodynamic Limits to the Efficiency of Solar Energy Conversion by Quantum Devices, in Alternative Energy Sources IV, vol. 3, ed. T.N.Veziroglu, pp.73-79, Ann Arbor Science (1982).

6. C.E.Byvik, A.M.Buoncristiani and B.T.Smith, Thermodynamic Limits to the Efficiency of Solar Energy Conversion by Quantum-Thermal Hybrid Systems, in Alternative Energy Sources IV, vol. 3, ed. T.N.Veziroglu, pp. 181-191, Ann Arbor Science (1982).

7. C.E.Byvik, W.S.Slemp, B.T.Smith and A.M.Buoncristiani, Radiation Damage and Annealing of Amorphous Silicon Solar Cells, The Conference Record 17th IEEE Photovoltaic Specialists Conference pp. 155-160 (1984).

8. C.E.Byvik, A.M.Buoncristiani and J.C.Barnes, Temperature Dependence of the Fluorescence Lifetime and Fluorescence Lineshape of Titanium Doped Sapphire,Technical Digest of the Optical Society of America: Topical Meeting on Tunable Solid State Lasers, pp.THB2-1, 1985.

9. C.E.Byvik, A.M.Buoncristiani and J.C.Barnes, Absorption and Emission Spectra of Titanium in Sapphire and in Transition Metal Titanates, Extended Abstracts of The Electrochemical Society, vol. 85-1, p. 630 (1985).

10. A.M.Buoncristiani, C.E.Byvik and J.C.Barnes, Temperature Dependance of the Fluorescence Lineshape and Lifetime of Titanium Doped Sapphire, the Proceediings of the International School of Atomic and Molecular Spectroscopy, Erice, Italy, p 572,June 1985.

11. A.M.Buoncristiani and B.T.Smith, Backscatter of Acoustic Signals from Inhomogeneities in Composites, Proceedings of the IEEE Ultrasonics Symposium, San Francisco, CA, October 1985, pp1068-1071 (1985).

12. R.V.Hess, P.Brockman, C.H.Bair, J.C.Barnes, C.E.Byvik, A.M.Buoncristiani and C.J.Magee, Development in Tunable Solid State Lasers with High Spectral Purity, High Efficiency and Long Lifetime for Differential Absorption Lidar, Proceedings of SPIE Volume 663: Laser Radar Technology and Applications, pp 14-23 (1986).

13. C.E.Byvik, A.M.Buoncristiani, and M.Kokta, Optical and Mass Spectroscopic Analysis of Titanium Doped Sapphire Crystals, Technical Digest of the Optical Society of America: Topical Meeting on Tunable Solid State Lasers, Zig Zag,OR, pp102-105 (1985).

14. C.E.Byvik, A.Inge, A.M.Buoncristiani and L.Roberts, Measurements of the Anisotropic Thermal Conductivity, Specific Heat and Quantum Efficiency of Titanium Doped Sapphire, Technical Digest for the Conference on Lasers and Electro-Optics, San Francisco CA, June 9-13, 1986, p 240 (1986).

15. B.T.Smith, A.M.Buoncristiani and S.M.Freeman, Digital Signal Processing Methods for Ultrasonic Waves in Solids, Proceedings of IEEE 1986 Ultrasonics Symposium, Williabsburg,VA, Vol. 2, pp 1041-46 (1986).

16. U.O.Farrukh, A.M.Buoncristiani and C.E.Byvik, Temperature Distribution in an End-Pumped Solid State Laser Rod, Technical Digest for the Topical Meeting on Tunable Solid State Lasers, October 26-28, 1987, Williamsburg VA, Vol 20, pp 111-114 (1987).

17. A.M.Buoncristiani and C.E.Byvik, A New Technique for the Spectrascopic Analysis of Insulating Crystal Fibers, in Excited State Processes in Condensed Matter: Proceedings of the International Conference on Luminescence, ed. Xu Xurong, North Holland pp. 869-870 (1988).

18. A.M.Buoncristiani, C.H.Bair, L.F.Roberts and J.Swetits, Modeling the Dynamics of Titanium Sapphire Lasers, in Advances in Laser Science III, Proceedings of the Third International Laser Science Conference, Atlantic City, 1987, eds. A.C.Tam, J.L.Gole and W.C.Stwalley, American Institute of Physics Conference Proceedings N0. 172, New York, pp.13-16 (1988).

19. C.E.Byvik and A.M.Buoncristiani, A New Method of Determining the Fluorescence and Absorptioin Spectra of Fiber Single Crystals, in Advances in Laser Science III, Proceedings of the Third International Laser Science Conference, Atlantic City, 1987, eds. A.C.Tam, J.L.Gole and W.C.Stwalley, American Institute of Physics Conference Proceedings N0. 172, New York, pp.448-450 (1988).

20. A.M.Buoncristiani, C.E.Byvik and U.O.Farrukh, Time Dependent Temperature Distribution in Pulsed Ti:Sapphire Lasers, Proceedings of the SPIE Conference on Simulation and Modeling of Optical Systems, Vol. 892, pp 68-73 (1988).

21. S.Albin, C.E.Byvik and A.M.Buoncristiani, Laser Induced Fluorescence of Dental Caries, Proceedings of the SPIE Conference on Laser Surgery: Characterization and Theraputics, Los Angeles, CA , Vol. 907, pp. 96-99 (1988).

22. S.Albin, V.K.Lakdawala, J.A.Williams, C.E.Byvik and A.M.Buoncristiani, Laser Damage Threshold of Diamond Films, Proceedings of the SPIE Conference on Micro- Optoelectronic Materials, Los Angeles, CA , Vol. 877, pp.86-89, (1988).

23. C.E.Byvik and A.M.Buoncristiani, Advances in Solid State Laser Technology for Space and Medical Applications, in the Proceedings of the SPIE Conference on Optoelectronics and Lasers, Los Angeles, CA January 1988.

24. A.M.Buoncristiani, C.E.Byvik,R.Caton.R.Selim, V. Modi, H.D.Leigh, G.Ramsey and C.Fein, Development of Superconducting "BAYCO" Wires with Low Resistance Contacts, in the Proceedings of NASA Workshop on Magnetic Suspension Technology, Hampton, VA , Feb. 2-4 1988, NASA CP 3202 (1993).

25. S.Albin, A.Cropper, L.Watkins,C.E.Byvik, A.M.Buoncristiani, K.V.Ravi and S.Yokota, Laser Damage of Diamond Film Windows, Proceedings of SPIE, San Diego,CA Aug 15-18, 1988.

26. R.V.Hess, A.M.Buoncristiani, C.H.Bair, P.Brockman, D.R.Schryer, B.T.Upchurch, G.M.Wood, Recent Advances in Long-Life Eye-Safe Solid State Lasers and CO2 Lasers for Laser Radar Applications, SPIE Procedings, Laser Radar, Vol. 999, Laser Radar III, pp. 2-18 (1988).

27. L.F.Roberts, J.J.Swetits, and A.M.Buoncristiani, A Mathematical Model of the Dynamics of a Ti:Sapphire Laser, Bul. Amer. Phys Soc., Vol. 33, No. 8, p. 1670 (1988). in Advances in Laser Science-IV, AIP Conference Proceedings No. 191, pp. 125-127, (1989).

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29. R.G.May, S.Moneyhun, W.Saleh, S.Suedora, R.O.Claus and A.M.Buoncristiani, IR Fiber-based Noncontact Pyrometer for Drop Tube Instrumentation, Proceedings SPIE, Infrared Fiber Optics, vol. 1048, pp. 175-182 (1989).

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31. A.M.Buoncristiani, Solid State Lasers for Use in Noncontact Temperature Measurements, Proceedings of the Second Noncontact Temperature Measurement Conference, JPL publication 89-16, MCPF 695009, pp 60-69 (1989).

32. A.M.Buoncristiani, G.Armagan, C.E.Byvik and S.Albin, Optical Materials for Space Based Laser Systems, in Proceedings of SPIE Volume 1118- Space Optical Materials and Space Qualification, pp. 25-34, (1989).

33. G.Armagan, A,M,Buoncristiani, B.DiBartolo, A.T.Inge, C.H.Bair, and R.V.Hess, Energy Transfer Among Cr,Tm and Ho Ions in YAG Crystals, OSA Proceedings on Tunable Solid State Laser, v0l. 5, pp.222-226, 1989.

34. G. Armagan, A.T.Inge, A.M.Buoncristiani and B.DiBartolo, Energy Transfer Dynamics of Luminescent Ions in Solids Using Kinetic and Spectroscopic Data, to appear in the Proceedings of the 7th International Conference on Dynamical Processes in Excited States of Solids, Athens, Ga September 1989.

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42. B.DiBartolo, G.Armagan and A.M.Buoncristiani, On the Temperature Dependence of the Rate of Energy Transfer Between Rare Earth Ions in Solids, Laser M2P Conference (1994).

43. A.M.Buoncristiani,Modeling of Tunable Optical Fiber Lasers, in Proceedings of the 9th Annual CIMTEC Forum on New Materials (1998).

C. Papers Delivered.

1. A.M.Buoncristiani and P.C.DeCelles, Isovector Form Factors of the Nucleons, Bull.Am.Phys.Soc., vol. 9, p. 640 (1964).

2. A.M.Buoncristiani, Applications of Modern Algebra, Panel Discussion at the 12th Dennison University Conference on Modern Algebra, Apr. 28-30 (1971).

3. D.L.Brito, A.M.Buoncristiani and M.D.Intrilligator, A New Approach to the Nash Bargaining Problem, presented at the Econometrics Society Meeting, San Francisco CA, Jan. 1975 and at the Economics Society Meeting, Toronto, CN, March 1975.

4. A.M.Buoncristiani, Generalized Octonians and Quarks, presented at the 729th Meeting of the American Mathematical Society, Blacksburg VA, Notices of the AMS p.336 (1975).

5. A.M.Buoncristiani and G.R.Webb, An Application of Catastrophy Theory to the Edge Tone, NASA CR-159102 (1979).

6. G.R.Webb and A.M.Buoncristiani, Catastrophy Theory Applied to Non-Linear Oscillators, Virginia Journal of Science, vol. 30, no.3, p. 39 (1979); also presented at the 17th Annual Meeting of the Society of Engineering Science, Dec 15-17, Georgia Inst. of Technology (1980).

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29. R.Selim R.Caton, M.Buoncristiani,C.Byvik, R.Edahl AND S.Wise, Low Resistance Contacts to High Tc Superconductors, Bul. Am. Phys. Soc. vol. 34, no.6, p.1544 (1989).

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36. A. M. Buoncristiani, G. Armagan, B. DiBartolo and J. J. Swetits, Energy Transfer in Cr, Tm: YAG, presented at the International School of Atomic and Molecular Spectroscopy, 9th Course: Advances in Nonradiative Processes in Solids, Erice, Italy, June 15-29, 1989.

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39. T. G. Wrangler, J. J. Swetits, G. Armagan, A. M. Buoncristiani, C. H. Bair, R. V. Hess and K. H. Kim Rate Equation Analysis of Cr:Tm:Ho:YAG Lasers, presented in the Fifth Interdisciplinary Laser Science Conference (ILS-V), August 28-31, 1989.

40. G. Armagan, A. M. Buoncristiani, G. Ozen and B. DiBartolo, Spectroscopy of Cr,Tm:YAG and Tm,Ho:YAG Crystals, presented in the Fifth Interdisciplinary Laser Science Conference (ILS-V), August 28-31, 1989.

41. R.Caton, R.Selim and A.M.Buoncristiani, The Effect of Electron Irradiation on Properties and Contacts for YBa2Cu3Ox, Bul. APS, Vol. 34, No. 3 (1989).

42. G.Armagan, A.M.Buoncristiani and R.V.Hess, 2 Micron Laser Materials for Remote Atmospheric Sensors, presented at Laser M2P, Grenoble, Fr., July (1991).

43. B.DiBartolo,G.Armagan and A.M.Buoncristiani , Spectroscopic and Kinetic Data Related to the Energy Transfer Among Laser Ions in Solids, presented at Laser M2P, Grenoble, Fr., July (1991).

44. A.M.Buoncristiani, R.S.Rogowski and W.M.Yen, Activated Crystalline Fibers for Sensors, presented at the 5th Annual Smart Materials and Structures Workshop, Blacksburg, VA April (1992).

45. A.M.Buoncristiani and G.Armagan, Resonany Energy Transfer and Thermalization in Tm,Ho:YAG, presented at 70th Annual Meeting of VA Acad. of Sci., May (1992).

46. G.Armagan,A.M.Buoncristiani, N.Barnes and E. Modlin, Decay Knetics of Rare Earth Ions in Garnet and Fluoride Crystals, Dynamical Processes Conference, Athens,m GA, 1993.

47. B.DiBartolo, G.Armagan and A.M.Buoncristiani, On the Temperature Dependence of the Rate of Energy Transfer Between Rare Earth Ions in Solids, Laser M2P Conference (1994).

V. Grants and Special Awards

N.S.F. Post doctoral Summer Fellowship (1967).
Canadian Mathematical Congress, 14th Biennial Seminar Fellowship (1973).
Ohio State University Research Foundation, Faculty Research Grant (1974).
NASA-ASEE Summer Faculty Fellowship (1977).
NASA Research Grant NSG-1427, $20,400 : Aero-acoustic Noise Generation (1978) .
NASA-ASEE Summer Faculty Fellowship (1978).
NASA Research Grant NSG-1514, $186,400 : Optical Energy Conversion (1978-1983)
NATO Advanced Study Institute Fellowship (1980).
Christopher Newport College Faculty Research Grant (1981).
NASA Research Grant NAG-1-431, $179,800 : Scattering of Ultrasonic Waves (1983- 1986) .
Christopher Newport College Faculty Research Grant (1984).
NASA Research Grant NAG-1-542, $49,100 : Tunable Solid State Lasers (1983-1986).
Dean William T. Parks Memorial Colloquium Speaker (1986).
National Research Council Senior Resident Research Associateship (1986-1988)
NASA Research Grant NAG-1-576, $764,000 : Spectroscopy of Solid State Laser Materials (1987-94)
Idaho National Engineering Laboratory $12,000: Optical Fiber Sensor of Thermal Degradation (1994-5)
NASA Cooperativer Agreement NCC-1-179 : $64,990, Spectroscopy of Solid State Laser Materials (1993-1994).
NASA Cooperativer Agreement NCC-1-204 : $234,100, Spectroscopy of Atmospheric Trace Gases (1995-7).
T. Jefferson National Accelerator Facility: $25,814, Free Electron Laser Development (1996-7)
NASA Research Grant NAG-1-1443, $237,553 : Optical Fiber Spectroscopy (1992-1998).
NASA Research Grant NCC1-0126, $12,050, Optical Fiber Research (2002-2003)
SURA Grant 2003-002, Support for Optical Fiber Workshop, $9,500 (2003).

VI. Honors and Awards

NASA Group Achievement Award [1988] : ...for significant acomplishments in developing Titanium doped Sapphire laser materials.

U. S. Patent Number: 4890915 [Jan. 2,1990] -- Method and Apparatus for Determining Optical Absorption and Emission Characteristics of Crystalline and non-Crystalline Fibers.

NASA Public Service Medal [1993] : ...for significant contributions to NASA's advanced solid state laser development programs for use in spaceborne remote sensing.

VII. Consultancies

Engineering Development Laboratories, Newport News, VA
W.J.Shafer Associates, Reston, VA
D.H.Wagner Associates, Inc.
Sentel, Inc, Newport News

Board of Trustees, Southeastern Universities Research Association (SURA), 1991- 2005
Board of Directors, Communication Ventures, Inc. Newport News, VA 1992-1994
Selection Panel for Virginia's Outstanding Scientist Award, 1989 - 2008
Board of Directors, Hampton Roads Research Partnership, 2001 - 2005
Advisory Board, Virginia Modeling, Analysis and Simulation Center, 2003- 2005
Director, CNU activites at the Applied Research Center, 2001 - 2005

Referee for Physical Review, Physical Review Letters, Applied Optics, J. Optical Society B, J. Luminescence, Surface Science