

KUMBLE R. SUBBASWAMY

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Personal: Birthplace: Bangalore, Karnataka, India
Nationality: U.S. citizen

Education

Bangalore University Bangalore, Karnataka State, India	1969	Bachelor of Science in Physics (Hons.)
Delhi University, India, Delhi, India	1971	Master of Science in Physics
Indiana University Bloomington, Indiana	1976	Ph.D. in Physics

Professional Positions

University of Massachusetts Chancellor, 2012- Professor, Department of Physics and Astronomy, 2012-	Amherst, Massachusetts
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University of Kentucky Provost, 2006-2012 Executive Director, University of Kentucky Research Foundation, 2007-2012 Professor of Physics, 2006-2012	Lexington, Kentucky
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Indiana University Dean, College of Arts and Sciences, 2000-2006 Professor, Department of Physics, 2000-2006	Bloomington, Indiana
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University of Miami Dean, College of Arts and Sciences, 1997-2000 Professor, Department of Physics, 1997-2000	Coral Gables, Florida
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University of Kentucky Chair, Department of Physics & Astronomy, 1993- 1997	Lexington, Kentucky
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Associate Dean, College of Arts & Sciences, 1991 -1993
Director of Graduate Studies, Department of Physics, 1987-90
Professor of Physics, 1988- 1997
Associate Professor of Physics, 1982-1988
Assistant Professor of Physics, 1978-1982

University of California, Irvine

Irvine, California

Research Associate, Department of Physics, 1976-1978

Administrative Experience and Select Accomplishments

University of Kentucky (Land-grant university and the state’s flagship; Carnegie Research-Very High category: 27,000 students and an annual budget of \$2.5 billion) as Provost (2006-2012), I served as the second ranking executive in the University administration with responsibility for overseeing all academic and research operations. In this position, direct reports to me consisted of eighteen deans, including the deans of Medicine and five other health care colleges, and four vice-presidents, including Research, Institutional Effectiveness, Diversity, and Student Affairs. My overarching assignment was to translate the university’s legislative mandate to become a Top 20 public research university by 2020 into practical reality. We developed a “Business Plan” of metrics, a “gap analysis,” and a funding model. As Provost, I led development of the Strategic Plan for implementing the Top 20 aspiration. Progress was made on all fronts.

Indiana University, Bloomington (AAU, Carnegie Research-Very High; 29,000 undergraduate and 9,000 graduate/professional students), as Dean of Arts & Sciences [2000-2006] I was the chief academic and administrative officer of the College of Arts and Sciences (65 departments and programs; 775 full-time faculty; 9,000 undergraduate and 3000 graduate students, annual direct expenditure budget of approximately \$175 million). IU operates under a responsibility-centered, decentralized fiscal system, and the academic schools are very autonomous. Significant accomplishments of the College during my stewardship: stabilized enrollment, nearly doubled grants and contracts, began two major research laboratory construction projects, started several new undergraduate programs (e.g., International Studies, Biotechnology), established new research institutes (e.g., Arts & Humanities, 18th Century Studies, Biocomplexity, Functional MRI), set up collaborative degree programs (B.S./MBA; B.S./J.D.); increased graduate financial support, increased diversity of faculty, improved industrial and corporate relations, increased fundraising (raised more than \$120 million per IU Foundation records).

University of Miami, Coral Gables (Private, Carnegie Research Extensive) as Dean of the College of Arts and Sciences [1997-2000] (17 departments, 310 full-time faculty, 3300 undergraduate majors, 500 graduate students, annual budget of approximately \$37 million) I was the chief

academic and administrative officer of the largest academic unit. The University has a rather decentralized administrative philosophy, and each college and school is fairly autonomous. Immediately upon my arrival I began a year-long comprehensive strategic planning process. Initiatives undertaken: improved recruitment of high ability undergraduate students; initiated curriculum review with emphasis on interdisciplinary programs; adopted rational faculty workload policies; improved academic advising; enhanced research infrastructure; and set up a professional advancement effort.

As Chair of the Department of Physics & Astronomy ['93-'97] (27.5 faculty FTE, 16 staff, 60 graduate students, 40 undergraduate majors, \$2.1M personnel and operating budget, \$2.5M extramural research funds) at the **University of Kentucky**, I had responsibility for all aspects of administration: planning, academic programs (B.S., M.S., Ph.D., and service courses for engineering, pre-med, and general studies), faculty development (recruitment, tenure and promotion, evaluation), staff affairs, and research support (machine and electronic shops, computing, and indirect cost returns). Initiated improvements in: teaching evaluation, mentoring of Assistant professors, infrastructure (labs, shops), and communication among groups. During 94-95 I led a self-study effort that resulted in specific initiatives to improve all aspects of the Department's missions. I also convinced the faculty to relinquish a research staff position (draftsman) in favor of hiring an Instructional Laboratory Specialist to improve lower division physics laboratories. Major improvements to the instructional laboratories (to the tune of \$200K) were instituted. Two faculty members I recruited were awarded Sloan Research Fellowships (the first two in the history of the Department). I initiated open debate on the Department's role in affirmative action, and lobbied the faculty successfully to make a strong commitment to increasing under-represented groups. During my term the department hired a woman faculty member (first in 30 years), and a black faculty member. Extramural support grew from \$2M to \$3M during the last two years of my chairmanship.

As Associate Dean of the College of Arts & Sciences ['91-93] (22 departments, 350 faculty, \$28 million budget) at the **University of Kentucky** (land grant, Carnegie Research I University with 24,000 students on the main academic campus) I assisted the Dean, with one other Associate Dean, in the management of all facets: Development of a strategic plan (incorporating the changing nature of the professoriate, of higher education in general); preparation of two annual budgets; planning and implementation of a 5% mid-year budget reduction and a 10% recurring cut; development of a restructuring plan for the College to absorb the cuts; and promotion and tenure decisions. I had the primary responsibility for coordinating the course schedule for the College, and for the management of faculty distribution of effort (where we are experimenting with variable profiles), for allocating teaching resources, and for working with the Vice Chancellor for Research in coordinating the grant activity (about \$5 million per year) and the research support activity (about \$1 million per year) in the College. Among new

initiatives I shared responsibility for were a new pilot project for a cohesive general studies program for undergraduates (the MiniCollege Method), and a systematic evaluation of graduate programs.

As Director of Graduate Studies in the Department of Physics, I oversaw a complete revision of the curriculum, qualifying examination, and advising of graduate students. I instituted a vigorous recruitment effort, especially among regional small colleges and universities. At the end of my term as Director, a U.S. Department of Education Fellowship grant to establish 8 new fellowships was awarded to the program.

Concurrent Positions

Consultant, Scientific Research Corp., Santa Monica, CA, 1981-1982

Visiting Scientist, International Center for Theoretical Physics, Trieste, Italy, 1984

Visiting Scientist, Oak Ridge National Laboratory, Oak Ridge, 1985

Technical Advisor, Synectico, Inc., Redondo Beach, CA., 1987-1988

Professore a contratto, Universita di Pavia, Italy, May 1990

Professional Service and Recognition:

Elected Fellow of the American Physical Society, Div. of Condensed Matter Physics, 1992

Panelist, American Council on Education General and Special meetings (2008, 2009)

Member, Board of Directors, Coldstream Laboratories, Inc. (start-up), 2010-2012

Member, Board of Directors, Kentucky World Trade Center, 2010-2012

Invited Presenter, International Education Dialogue-Berlin (German-American Fulbright) (Apr. 2009)

Member of the Board, National Association of College & University Business Officers, 2007-2010

Chair, South Eastern Conference Academic Consortium, 2007-2010

Chair, Executive Committee, Bloomington Life Sciences Partnership, 2004-2006

Co-Chair: Bloomington Life Sciences Partnership (Economic Development), 2003-04

Co-Chair: IUB Campus United Way Drive, 2003-05

Program Coordinator, AAU Arts & Sciences Deans' Meeting, 2003-04

Guest Presenter, CIC Leadership Training Program, 2004, 2006

Guest Presenter at the Big10 Fund Raising Institute, 2003

Consulting Member, Indiana University Foundation Board, 2002-2006

Listed in American Men and Women of Science (Cattell Press, 1986)

Listed in Who's Who in American Science (Marqui's Who's Who, 1991)

Grants and Contracts:

"Optical Frequency Dynamics of Ionic Liquids", National Science Foundation, 1983-1987, \$81,400

Grant of Supercomputer Time, Pittsburgh Supercomputer Center, National Science Foundation, 1986-1988

"Reaction Rates and Pathways in Coal Plasticity Transformation", (Component of the Consortium for Fossil Fuel Liquefaction Science) Department of Energy, 1988-1989, \$18,000

"Computer Modeling of Vitrinite", Department of Energy, 1989-1990, \$23,000

"Computational Chemistry of Model Compounds", Department of Energy, 1990-1993, \$123,536

"Computational Chemistry of Model Compounds", Department of Energy, 1993-1995, \$130,000

"Low Dimensional Metals", National Science Foundation (EPSCoR), 1991-1994, \$80,000 (share as co-PI in a \$1M project)

"Computational Chemistry of Model Compounds," Department of Energy, 1993-1996, \$192,000

"Multi-level Approach to Complex Structures", National Science Foundation (EPSCoR), 1995-1998, \$150K (share as co-PI)

Post-doctoral Associates and Graduate Students

Dr. Gaetano Senatore 1985-1986

Dr. Michael Johnson 1986-1988

Dr. Majed Sawtarie Pew Summer Fellow, 1988

Dr. Harriet Ades 1989-1997

Dr. Madhu Menon 1991- 1994

Dr. Ernst Richter 1993-1994

Dr. Marek Grabowski, Ph.D. 1981

Dr. Pawel Hawrylak, Ph.D. 1984

Mr. Milan Rajkovic, M.S. 1984

Mr. Jinyang Tang, Ph.D. 1993

Ms. Jenny Yang, Ph.D. 1994

Mr. Carl Schwendler, 1994-1997

Publications

Book Chapters and Books

1. "Surface and Size Effects on the Light Scattering Spectra of Solids," D.L. Mills and K.R. Subbaswamy, in (Progress in Optics), vol. 19, edited by E. Wolf (North Holland, Amsterdam, 1981).
2. "Local Density Theory of Polarizability", G.D. Mahan and K.R. Subbaswamy (Plenum Press, New York, 1991) 255pp.
3. "Nonlinear Optical Constants of Alkali Halide Crystals" in Quantum Mechanical Cluster Calculations in Solid State Studies, edited by R.W. Grimes and C.R.A. Catlow (World Scientific, Singapore, 1992).
4. "Covalent Bonding between Fullerenes," M. Menon and K.R. Subbaswamy, in Fullerene Polymers and Fullerene Polymer Composites, edited by P.C. Eklund and A.M. Rao (Springer, Berlin, 2000).

Journal Publications

5. "Renormalization Group Results for Lattice-Gas Phase Boundaries in Two Dimensions," K.R. Subbaswamy and G.D. Mahan, Phys. Rev. Letters (37), 642 (1976).
6. "Brillouin Scattering from Thermal Fluctuations in Superionic Conductors," K. R. Subbaswamy, Solid State Commun. (19), 1157 (1976); (21), 371 (1976).
7. "Edge Localized Vibration Modes on a Rectangular Ridge," A.A. Maradudin and K.R. Subbaswamy, J. Appl. Phys. (48), 3810 (1977).
8. "Theory of Inelastic Light Scattering from Acoustic Phonons in an Opaque Crystal," K.R. Subbaswamy and A.A. Maradudin, Indian J. Pure and Appl. Phys., (16), 282 (1978).
9. "Light Scattering Spectra of Guided Wave Polaritons in Thin Crystals: Theory," K.R. Subbaswamy and D.L. Mills, Solid State Commun. (27), 1085 (1978).
10. "Interaction between Local Phonon Modes and Plasmons in n-Type Semiconductors," R. Sirko, K.R. Subbaswamy, and D.L. Mills, Phys. Rev. B(18), 851 (1978).
11. "Simple Model of Structural Phase Transition of the Order-Disorder Type," K.R. Subbaswamy and D.L. Mills, Phys. Rev. B(18), 1446 (1978).
12. "Photo-Elastic and Surface Corrugation Contributions to Brillouin Scattering from an Opaque Crystal," K.R. Subbaswamy and A.A. Maradudin, Phys. Rev. B(18), 4810 (1978).
13. " ϕ^4 -Domain Walls in Thin Ferromagnetic Films: Occurrence of a Novel Critical Point," K.R. Subbaswamy and D.L. Mills, Phys. Rev. Letters (41), 1079 (1978).
14. "Complex Scalar Fields in One Dimension with Four-fold Phase Anisotropy: Solitary-Wave Solutions," K.R. Subbaswamy and S.E. Trullinger, Phys. Rev. A(19), 1340 (1979).
15. "Influence of fd Mixing on Electronic Impurity Levels in Rare Earth Semiconducting Compounds," R.E. Camley, J.C. Parlebas, K.R. Subbaswamy and D.L. Mills, J. Physique (Colloq.) (40), C5-372 (1979).
16. "Analysis of Breit-Wigner Lineshape in the Raman Spectra of Graphite Intercalation

- Compounds," P.C. Eklund and K.R. Subbaswamy, Phys. Rev.B(20), 5157 (1979).
17. "Attracting Solitons and Discontinuous Lock-in Transition in a Peierls-Frohlich Condensate," M. Grabowski, K.R. Subbaswamy, and B. Horovitz, Solid State Commun. (34), 911 (1980).
 18. "Instability of Non-Topological Solitons of coupled Scalar Field Theories in Two Dimensions," K.R. Subbaswamy and S.E. Trullinger, Phys. Rev. D(22), 1495 (1980).
 19. "Intriguing Properties of Kinks in a Simple Model with a Two Component Field," K.R. Subbaswamy and S. E. Trullinger, Physica 2 D (1981) 379.
 20. "Bond Alternation, On-Site Coulomb Correlations, and Solitons in Polyacetylene," K.R. Subbaswamy and M. Grabowski, Phys. Rev.B(24), 2168 (1981).
 21. "Raman Scattering in High Temperature and Molten Potassium Iodide," P.C. Eklund, J. Giergiel, and K.R. Subbaswamy, Solid State Commun. (40), 139 (1981).
 22. "Phase-Amplitude Soliton Lattice and the Lock-In Transition," M. Grabowski and K.R. Subbaswamy, Physica 5 D (1982) 348.
 23. "Thermodynamic Model of Stage Transformations in Intercalated Graphite," P. Hawrylak and K.R. Subbaswamy, Phys. Rev. B(28), 4851 (1983).
 24. "Numerical Simulation of Kink Dynamics for a Two-component Field," P. Hawrylak, K.R. Subbaswamy, and S.E. Trullinger, Phys. Rev.D(29), 1154 (1984).
 25. "Elastic Plates Model of Domain Walls in Intercalated Graphite," P. Hawrylak, K.R. Subbaswamy, and G.W. Lehman, Solid State Commun.(51), 787 (1984).
 26. "Kinetics of Stage Transformation in Intercalated Graphite," P. Hawrylak and K.R. Subbaswamy, Phys. Rev. Lett. (53), 2098 (1984).
 27. "Light Scattering from Molten Alkali Halides," J. Giergiel, P.C. Eklund, and K.R. Subbaswamy, Phys. Rev. B(29), 3490 (1984).
 28. "Effect of c-axis Dispersion on the Optical Properties of Intercalated Graphite," D. Hoffman, P.C. Eklund, P. Hawrylak, and K.R. Subbaswamy, Phys. Rev. B(31), 3973 (1985).
 29. "Electro-optic Contribution to Field Induced First Order Raman Scattering from Alkali Halides," K.R. Subbaswamy and G.D. Mahan, Phys. Rev. B(32),5453 (1985).
 30. "Local Density Theory of Ionic Hyperpolarizability," K.R. Subbaswamy and G.D. Mahan, J. Chem. Phys. (84) 3317 (1986).
 31. "Theory of Microwave Absorption in Wide-Bandgap Insulators: The Role of Thermal Phonon Lifetimes," K.R. Subbaswamy and D.L. Mills, Phys. Rev. B(33), 4213 (1986).
 32. "Hyperpolarizabilities of Closed Shell Atoms in the Density Functional Formalism," G. Senatore and K.R. Subbaswamy, Phys. Rev. A(34), 3619 (1986).
 33. "Density Dependence of the Dielectric Constant of Rare Gas Crystals," G. Senatore and K.R. Subbaswamy, Phys. Rev. B(34), 5754 (1986).
 34. "Electro-Optic Contribution to Raman Scattering from Alkali Halides," G.D. Mahan and K.R. Subbaswamy, Phys. Rev. B(33), 8657 (1986).
 35. "Nonlinear Response of Closed Shell Atoms in the Density Functional Formalism," G. Senatore and K.R. Subbaswamy, Phys. Rev. A(35), 2440 (1987).
 36. "Hyperpolarizabilities of Alkali Halide Crystals using the Local Density Approximation," M.D. Johnson, K.R. Subbaswamy, and G. Senatore, Phys. Rev. B36, 9202 (1987).
 37. "Refractive Index of Rare Gas Liquids: First Principles Calculation," M.D. Johnson, K.R. Subbaswamy, and G. Senatore, Phys. Rev. B37, 6508 (1988).

38. "Density Functional Approach to First Principles Calculations for Liquids," G. Senatore, M.D. Johnson, and K.R. Subbaswamy, *Phil. Mag.* A59, 53 (1989).
39. "Nearest Neighbor Resonating Valence Bond State in Two Dimensions," M.D. Johnson and K.R. Subbaswamy, *Phys. Rev.* B37, 9390, (1988).
40. "Cubic Anisotropy of Hyperpolarizabilities for Alkali Halide Crystals", M.D. Johnson, and K.R. Subbaswamy, *Phys. Rev.* B39 ., 10 275 (1989).
41. "Volume Dependence of Polarizability in Alkali Halides", S. Pettersson and K.R. Subbaswamy, *Phys. Rev.* B 42, 5883 (1990).
42. "Molecular Orbital Investigation of Coal Fragments and Model Compounds", H.F. Ades, A.L. Companion, and K.R. Subbaswamy, *J. Phys. Chem.*, 95, 2226 (1991).
43. "A Comparative Study of Semiempirical Bond Dissociation Energy Calculations", H.F. Ades, A.L. Companion, and K.R. Subbaswamy, *J. Phys. Chem.* 95, 6502 (1991).
44. "Universal Parameter Tight-Binding Molecular Dynamics: Application to C₆₀", Madhu Menon and K.R. Subbaswamy, *Phys. Rev. Lett.* 67, 3487 (1991).
45. "Nonlinear Optical Constants in Alkali Halide Crystals, K.R. Subbaswamy, *Rev. Solid State Phys.* 5, 291 (1991).
46. "Optimized Structures for C₆₀O and C₆₀O₂ From Damped Molecular Dynamics Optimization Scheme", Madhu Menon and K.R. Subbaswamy, *Chem. Phys. Lett.*, 201, 321 (1993).
47. "Nonorthogonal Tight-Binding Molecular Dynamics Study of Silicon Clusters", Madhu Menon and K.R. Subbaswamy, *Phys. Rev. B* 47, 12754 (1993).
48. "First-Principles Molecular Dynamics Study of Carbon Clusters", Madhu Menon, K.R. Subbaswamy, and Majid Sawtarie, *Phys. Rev. B* 48, 8398 (1993).
49. "Molecular Orbital Calculations for Iron Catalysts", H.F. Ades, A.L. Companion, and K.R. Subbaswamy, *Energy & Fuels*, 8, 71 (1994).
50. "Structure and Properties of C₆₀ Dimers by Tight-Binding Molecular Dynamics", Madhu Menon, K.R. Subbaswamy, and Majid Sawatarie, *Phys. Rev. B* 49, 13996 (1994).
51. "Structure of C₂₀: Cage vs. Bicyclic Rings," Majid Sawtarie, Madhu Menon and K.R. Subbaswamy, *Phys. Rev. B* 49, 7739 (1994).
52. "Structure of Si₆₀: Cage vs. Network Structure", Madhu Menon and K.R. Subbaswamy, *Chem. Phys. Lett.* 219, 219 (1994).
53. "Photoinduced Polymerization of Solid C₇₀ Films," A.M. Rao, M. Menon, P.C. Eklund, K.R. Subbaswamy and D.S. Cornett, M.A. Duncan, and I.J. Amster, *Chem. Phys. Lett.* 224, 106 (1994).
54. "Anisotropic Covalent Bonding in Photopolymerization of C₇₀," M. Menon, A.M. Rao, K.R. Subbaswamy, and P.C. Eklund, *Phys. Rev.* B51, 800 (1995).
55. "Transferable Nonorthogonal Tight-Binding Parameters for Silicon," M. Menon and K.R. Subbaswamy, *Phys. Rev. B* 50, 11577 (1994).
56. "Structure and Stability of Si₄₅ Clusters: A Generalized Tight-Binding Molecular Dynamics Approach," Madhu Menon and K.R. Subbaswamy, *Phys. Rev. B* 51, 17952 (1995).
57. "Structural and Vibrational Properties of Fullerenes and Nanotubes in a Non-orthogonal Tight-Binding Scheme," Madhu Menon, Ernst Richter, and K.R. Subbaswamy, *J. Chem. Phys.* 104, 5875 (1996).

58. "Quantum Chemical Investigation of Coliquefaction Reactions of Coal and Polymers," H.F. Ades and K.R. Subbaswamy, *Fuel Proc. Tech.* (1996).
59. "Diameter-selective Raman Scattering from Vibrational Modes in Carbon Nanotubes," A.M. Rao, E. Richter, S. Bandow, B. Chase, P.C. Eklund, K.A. Williams, S. Fang, K.R. Subbaswamy, M. Menon, A. Thess, R.E. Smalley, G. Dresselhaus, and M.S. Dresselhaus, *Science* 275, 181 (January 10, 1997).
60. "Improved Tight-Binding Parametrization for Silicon," Madhu Menon and K.R. Subbaswamy, *Phys. Rev. B* 55, 9231 (1997).
61. "Theory of size-dependent resonance Raman scattering from single-walled carbon nanotubes," Ernst Richter and K.R. Subbaswamy, *Physical Review Letters* 79, 2738 (1997).
62. "Structure and vibrational properties of silicon clathrates in a generalized tight-binding molecular dynamics scheme," Madhu Menon, Ernst Richter, and K.R. Subbaswamy, *Physical Review B* 56, 12290 (1997).
63. "Fused Fullerenes and 'Gearoids': Proposed New Forms of Carbon," Madhu Menon, Ernst Richter, and K.R. Subbaswamy, *Phys. Rev. B* 57, 4063 (1998).