Mark G. McNamee
Office of the Provost
Virginia Polytechnic Institute and State University
210 Burruss Hall 0132, Blacksburg, VA 24061

Voice: (540) 231-6123 Fax: (540) 231-4265 E-mail: mmcnamee@vt.edu

PROFESSIONAL PREPARATION:

Massachusetts Institute of Technology	Chemistry	B.S., 1968
Stanford University	Chemistry	Ph.D., 1973

APPOINTMENTS:

Virginia Polytechnic Institute and State University

2001-present University Provost and Vice President for Academic Affairs

University of California, Davis

1995-2001 Dean, Division of Biological Sciences
1993-1994 Interim Dean, Division of Biological Sciences
1975-1993 Department of Biochemistry and Biophysics (now called Section of Molecular and Cellular Biology), Assistant Professor (1975-80); Associate Professor (1980-85); Professor (1985-present); Chair (1990-1993)

Columbia University

1973-1975 Postdoctoral Associate, College of Physicians and Surgeons, New York (Dr. Arthur Karlin)

HONORS AND NOTABLE RECOGNITIONS:

2002-present Member, National Institute Aerospace, Board of Directors (Chair, 2001-2002)
1999-present Chair, External Advisory Committee NIH Specialized Neuroscience Research Program, Universidat Central Del Caribe
1988-1990 NIH Study Section Member –Neurological Sciences 1
1987-1994 Javits Neuroscience Research Investigator – NIH

PUBLICATIONS – FIVE RELEVANT:

PUBLICATIONS – ADDITIONAL PUBLICATIONS:

Navadeo, M., Nieves, M., Rojas, L.V., McNamee, M.G. & Lasalde-Dominicci, J.A. (2003). Mutations at the lipid protein interface M3 transmembrane segment of the muscle-type acetylcholine receptor alter channel gating. *Biochemistry* (in press).

Santiago, J., Guzman, G. R., Rojas, L. V., Marti, R., Guillermo, A., Santana, L. F., McNamee, M. G., Lasalde-Dominicci, J. A. (2001). Probing the effects of membrane cholesterol in torpedo californica acetylcholine receptor and the novel lipid-exposed mutation aC418W in xenopus oocytes. *The Journal of Biological Chemistry*. Vol. 276, No. 49, 46523-46532.

Cruz-Martin, A., Mercado, J. L., Rojas, L. V., McNamee, M. G., Lasalde-Dominicci, J. A. (2001). Typtophan substitutions at lipid-exposed positions of the gamma M3 transmembrance domain increase the macroscopic ionic current response of the torpedo californica nicotinic acetylcholine receptor. *Journal of Membrane Biology*. 183: 61-70.

Tamamizu , S., Guzman, G., Santiago, J., Rojas, L.V., McNamee, M.G. & Lasalde-Dominicci, J.A. (2000). Functional affects of periodic tryptophan substitutions in the alpha M4 transmembrane domain of the torpedo californica nicotinic acetylcoline receptor. *Biochemistry*, Vol. 39, Number 016, 4666-4673.

Tamamizu, S., Lee Y-H. McNamee, M.G. & Lasalde-Dominicci, J.A. (1999). Mutations at the lipid protein interface of the mouse-acetylcholine receptor after channel gating. *Journal of Membrane Biology*, Vol. 170, July, 157-174.

SYNERGISTIC ACTIVITIES:

1. Appointed first female dean of agriculture and first female vice provost.
2. Allocated funds to initiate full-day child care for the first time at Virginia Tech.
3. Committed substantial space, dollars, and staff resources in support to the Advance grant.
4. Advocated for adoption of dual career guidelines and provided funds to partially support spouse appointments.
5. Provided funding for Mid-Atlantic Conference on the Scholarship of Diversity at Virginia Tech for 2004 and 2005, and for a variety of other diversity-related faculty initiatives.
6. Annually fund the Women and Minority Artists and Scholars Lecture Series.
7. Personally oversaw review of race-conscious programs in accordance with Attorney General guidance and assured their lawful continuation. Worked with committee of the Board of Visitors to assure continued attention to diversity-related issues in admissions, financial aid, and student programming.
8. Periodically meet with constituent groups to discuss issues of concern -- Black Caucus, women and administrators' group.

COLLABORATORS AND OTHER AFFILIATIONS:

1. Member, Governor Biotechnology Commission
2. Member, Board of Directors, Carilion Biomedical Institute

Robert John Bodnar
University Distinguished Professor of Geochemistry

Department of Geological Sciences
Virginia Polytechnic Institute & State University
Blacksburg, VA 24061 USA
Telephone: (540) 231-7455; FAX: (540) 231-3386; E-mail: rjb@vt.edu

ACADEMIC POSITIONS:

Assistant Professor, Department of Geological Sciences, VPI&SU, 1985-1988
Associate Professor (with tenure), Department of Geological Sciences, VPI&SU, 1988-1992
Professor of Geochemistry, Department of Geological Sciences, VPI&SU, 1992-
C. C. Garvin Professor of Geochemistry, Department of Geosciences, VPI&SU, 1997-
University Distinguished Professor, Department of Geosciences, VPI&SU, 1999-

EDUCATION:

B.S. (Chemistry) University of Pittsburgh, 1975
M.S. (Geology) University of Arizona, 1978
Ph.D. (Geochemistry and Mineralogy) The Pennsylvania State University, 1985

PAST PROFESSIONAL POSITIONS:

1978 - 1979, Geologist, USGS, Branch of Experimental Geochemistry and Mineralogy, Reston, VA
1984 - 1985, Research Geochemist, Ore Deposits Group, Chevron Oil Field Research Co., La Habra, CA

CURRENT PROFESSIONAL AFFILIATIONS AND COMMITTEE ASSIGNMENTS:

Member: Society of Economic Geologists; Mineralogical Society of America; American Geophysical Union; Geochemical Society; Sigma Xi
Editorial Board for the journal *Geofluids*

AWARDS AND HONORS:

Society of Economic Geologists' Lindgren Award: 1986
Fellow, Society of Economic Geologists: 1986
National Science Foundation Presidential Young Investigator Award: 1987
Fellow, Mineralogical Society of America: 1990
Alumni Award for Research Excellence, Virginia Tech: 1991
Society of Economic Geologists Thayer Lindsley Lecturer: 1995-96
Centennial Fellow of the College of Earth & Mineral Sciences, Penn State University: 1996
C. C. Garvin Professor of Geochemistry, Virginia Tech: 1997-
N. P Ermakov Prize from the Asian & Pacific International Fluid Inclusion Society: 1998
University Distinguished Professor, Virginia Tech: 1999-
Mineralogical Society of America Distinguished Lecturer: 2001-2002
Society of Economic Geologists' Distinguished Lecturer: 2005

Five recent papers:

Darling, R.S., Chou, I-Ming and Bodnar, R.J. (1997) An occurrence of the metastable cristobalite in high pressure garnet granulite. **Science**, **276**, 91-93.

Zolensky ME, Bodnar RJ, Bogard DD, Garrison DH, Gibson EK, Nyquist LE, Reese Y, Shih C-Y & Wiesmann H (1999) Asteroidal water within fluid inclusion-bearing halite in an H5 chondrite. **Science**, **285**, no. 5432, 1377-1379.

Bodnar RJ (2003) Introduction to fluid inclusions. *In* I. Samson, A. Anderson, & D. Marshall, eds. Fluid Inclusions: Analysis and Interpretation. ***Mineral. Assoc. Canada, Short Course* 32**, 1-8.

Elwood Madden ME, Bodnar RJ & Rimstidt JD (2004) Jarosite as an indicator of water-limited chemical weathering on Mars. **Nature**, **431**, 821-823.

Bodnar RJ (2005) Introduction to Fluids in Planetary Systems. **Elements**, **1**, 9-12.

Synergistic Activities:

Regularly teach an introductory level course for non-science majors entitled "Resources and Environmental Issues. This course is intended to present non-scientists with a rational view of how science impacts their everyday lives and serves to improve the human condition.

Serve as Associate Editor for the journal Geofluids

Served on the Petrology and Geochemistry panel within the Geosciences Directorate of NSF

Served in advisory capacity to Department of Energy research project on the history of hydrothermal fluids at Yucca Mountain, Nevada

Served as the Guest Editor and wrote introduction on Fluids in Planetary Systems for the inaugural issue of ELEMENTS, a multidisciplinary magazine for the earth, environmental and materials sciences

Served as the faculty advisor to the Society of Economic Geologists VT student chapter.

Present talks on DUSEL to community and political groups in Virginia

Advisors:

Dr. Richard E. Beane (MS thesis advisor; deceased)

Dr. C. Wayne Burnham (Ph.D. advisor)
Penn State University (currently at Arizona State University)

Recent collaborators (exclusive of advisors and those shown on publication list, prior NSF support, and current and pending support)

Benedetto DeVivo, Jim Webster, Michael Weidenbeck, David Kring, Hap McSween

HERBERT H. EINSTEIN

A. Professional Preparation:

Dipl. Ing.	Eidgenössische Technische Hochschule (ETH), Zürich, Switzerland	1960
Sc.D.	ETH	1966

B. Appointments:

MIT Professor	1982 - present
MIT Associate Professor	1973 - 1982
Norwegian Geot. Institute	1982
EPF - Lausanne	1982, 1971 - 1972
Basler & Hofmann - Zürich	1971 - 1972
MIT, Research Associate and Visiting Professor	1966 - 1971
ETH	1961 - 1966

C. Publications:

Crack Coalescence in Brittle Materials: An Overview. (co-authored with A. Bobet). *EUROCK 2004 &53rd Geomechanics Colloquium*, Schubert (ed.) 2004.

"Three-Dimensional Hierarchical Stochastic Modeling of Rock Fracture Systems: An Example from the Yates Field". (Co-authored with V. Ivanova). *Proc.* NARMS/Gulfrocks, 2004.

Assessment and management of roof fall risks in underground coal mines. (Co-authored with H.S.B. Duzgun) Safety Science, 42, pp. 23-41, 2004.

The Decision Aids for Tunnelling (DAT) – An Update, Transportation Research Record, No. 1892, pp. 199-207, 2004.

Uncertainty in Rock Mechanics and Rock Engineering – Then and Now, Proc. 10th Int'l. Congress of the ISRM, The South African Institute of Mining and Metallurgy Symposium Series S33, Vol. 1, pp. 281-293. 2003.

"Building the World's Longest Rail Tunnel", (co-authored with S. Löw), Geotimes, pp. 14-17, 2003.

Geologic Stochastic Modeling and Connectivity Assessment of Fracture Systems in the Boston Area (co-authored with T. Meyer), Rock Mech. Rock Engng. 35, No. 1, pp 23 - 44, 2002.

Risk Assessment and Management in Geotechnical Engineering, Keynote Lecture, Proc. 8th Portuguese Congress for Geotechnique, Lisbon, April 2002

"Quantifying Uncertain Engineering Geologic Information", Invited Lecture 50th Geomechanics Colloquium and Felsbau, No. 5, October, 2001

"ECSEL/MIT Engineering Education Workshop '99: A Report with Recommendations", (co-authored with L.L. Buciarelli, P.T. Terenzini, A.D. Walser), Journal of Engineering Education, April 2000.

Synergistic Activities:

Education

- Development of new Civil Engineering Curriculum at MIT. The new curriculum is design oriented and simultaneously provides more depth in fundamentals.
- Developer of IT based educational instruments which enhance active learning.

Conference Organization

- Chair and Co-editor of proceedings of UEF Conference on Landslides (over 100 participants)
- Co-chair of Soil and Rock America 2003 (simultaneously 12th Panam Conference on Soil Mechanics and Geotechnical Engineering and 39th U.S. Rock Mechanics Symposium); over 700 participants.

Other

- Chair of US National Committee for Rock Mechanics, 1st VP International Society for Rock Mechanics

B. Collaborators and Other Affiliations:

(i) Collaborators during the past 5 years:

A. Bobet, (Asst. Prof. Purdue Univ.), F. Descoeudres, (EPFL, Lausanne, Switzerland), J.-P. Dudt, (EPFL, Lausanne, Switzerland), H. Ernst, (Mass. Highway Dept), P. Grasso, (Geodata, Turin, Italy), C. Indermitte, (Consultant), V. Ivanova, (Schlumberger Associates), P. Kinnicutt, (Schlumberger Associates), Mahtab, (Geodata, Turin, Italy), T. Meyer, T. (Stucky Eng., Lausanne), J. Sinfield, (McKinsey, Chicago), L. Zhang (Arthur D. Little)

(ii) Graduate advisors:

Professor F. Balduzzi, Professor R. Hirschfeld (both deceased)

(iii) Thesis Advising

1999 M.Sc. A. To (Grad student, Berkeley), T. Meyer (Swiss Govt.), A. Martinez (Shell)
1999 Ph.D. L. Zhang (A.D. Little)
2000 M.Sc. C. Haas (Basler Partners), A. Liakos (?), M. Nussbaumer
(Bain and Company, Germany)
2001 M.Sc. M. Nikolinakou (Grad student, MIT), M.Sc. J.-L. Locsin (Grad student, MIT)
M.Eng. N. Miller (MIRARCO, Sudbury, Opt.)
2002 M.Sc. C. Kollarou (Greek Const. Co.), Ph.D. S. Suwansawat
(Prof. King Monkut's Inst. Of Tech., Thailand)
2003 M.Sc. S. Min (Grad. Student, MIT), J. Pei (Grad. Student, MIT), M.Eng.
J. Greenwood (Jacobs Assoc.)
2004 Ph.D. (C. Regalado (GeoConsult, San Juan, P.R.)
2004 M.Eng. A. Saldivar-Dali (Grad. Student, U. of Phillippines)

(iv) Postgraduate-Scholar Sponsor:

C.L. Indermitte (self employed consultant)
C. Marzer (Bonnard et Gardel, Lausanne)

BIOGRAPHICAL SKETCH

Robert D. Hatcher, Jr.

EDUCATION

Vanderbilt University, Nashville, Tennessee	B.A.	1961
Vanderbilt University, Nashville, Tennessee	M.S.	1962
University of Tennessee, Knoxville, Tennessee	Ph.D.	1965

UNIVERSITY RELATED EMPLOYMENT

Professor of Geology and UT Distinguished Scientist	2000–Present
Professor of Geology and UT/ORNL Distinguished Scientist	1986–2000
University of Tennessee/Oak Ridge National Laboratory Knoxville/Oak Ridge, Tennessee	
Professor of Geology	1980–1986
University of South Carolina, Columbia, South Carolina	
Professor of Geology	1978–1980
Florida State University, Tallahassee, Florida	
Assistant to Associate to Professor of Geology	1966–1978
Clemson University, Clemson, South Carolina	

OTHER PROFESSIONAL EMPLOYMENT

Humble Oil and Refining Company, New Orleans, Louisiana	1965–1966
(Geologist, Southeastern Division Stratigraphic-Paleontological Group)	

Robert D. Hatcher, Jr. has more than 30 years experience working on structural-tectonics problems in orogens. The principal goal in research is to gain a better understanding of the evolution of continental crust through study of the structure of mountain chains. Structural studies are conducted on all scales—from microscopic to 3-D map-scale analysis of the southern and central Appalachian orogen and by comparative studies of other chains. Major emphasis during the past 20 years has been in the mechanisms and boundary conditions for generation and emplacement of foreland and crystalline thrust sheets through geologic field studies—emphasizing construction of geologic maps and interpretive sections of previously unknown areas, interpreting available geophysical data, obtaining geochronological data (for determination of the ages of rock units and to bracket times of deformation and metamorphism), and obtaining petrologic data to determine original rock types of metamorphosed rock units and P-T conditions of deformation and metamorphism. The southern Appalachians have served as a generic orogen for study during most of career, with smaller research projects conducted in other parts of the Appalachians, Scandinavian Caledonides, Colombian Andes, and Canadian and U.S. Cordillera. He is presently involved in a three dimensional reconstruction of the Appalachian foreland fold-thrust belt and southern Appalachian basin with a goal of understanding the structural-stratigraphic framework and geologic controls of hydrocarbon occurrence.

No salary is budgeted for Professor Hatcher because he has a 12-month appointment.

Five Publications Relevant to this Proposal

Hatcher, R. D., Jr., 1999, Crust-forming processes, *in* Sinha, A. K. (ed.), Basement Tectonics 13: Netherlands, Kluwer Academic Publishers, p. 99-118.
Hatcher, R. D., Jr., 2001, Rheological partitioning during multiple reactivation of the Paleozoic Brevard Fault Zone, Southern Appalachians, USA, *in* Holdsworth, R. E., Strachan, R. A., Macloughlin, J. F., and Knipe, R. J., eds., The nature and significance of fault zone weakening: Geological Society of London Special Publication 186, p. 255–269.
Hatcher, R. D., Jr., 2002, The Alleghanian (Appalachian) orogeny, a product of zipper tectonics: Rotational transpressive continent–continent collision and closing of ancient oceans along irregular margins, in Catalán, J. R. M., Hatcher, R. D., Jr., Arenas, R., and García, F. D., eds., Variscan-Appalachian dynamics: The building of the late Paleozoic basement: Geological Society of America Special Paper 394, p. 199–208.
Keller, G. R., and Hatcher, R. D. , Jr.,, 1999, Some comparisons of the structure and evolution of the southern Appalachian–Ouachita orogen and portions of the Trans-European suture zone: Tectonophysics, v. 314, p. 43–68.
Hatcher, R. D., 2004, Properties of thrusts and the upper bounds for the size of thrust sheets, in McClay, K. R., ed., American Association of Petroleum Geologists Memoir 82, p. 18-29.

Five Other Significant Research Publications

Carrigan, C. W., Miller, C. F., Fullagar, P. D., Hatcher, R. D., Jr., Bream, B. R., and Coath C. D., 2003, Ion microprobe age and geochemistry of southern Appalachian basement, with implications for Proterozoic and Paleozoic reconstructions: Precambrian Research, v. 120, p. 1–36.
Montes, C., Restrepo-Pace, P, and Hatcher, R. D., Jr., 2003, Three-dimensional structure and kinematics if the Piedras–Girardot fold belt: Surface expression of transpressional deformation in the northern Andes, in Bartolini, C., Buffler, R. T., and Blickwede, J., eds., The Circum-Gulf of Mexico and the Caribbean: Hydrocarbon habitats, basin formation, and plate tectonics: AAPG Memoir 79, p. 153–156.
Hatcher, R. D. Jr., Bream, B. R., Miller, C. L., Eckert, J. O. Jr. Fullagar, P. D., and Carrigan, C. W. 2004, Paleozoic Structure of Southern Appalachian Blue Ridge Grenvillian Internal Basement Massifs, *in* Tollo, R. P., Corriveau, L., McLelland, J., and Bartholomew, M. J., eds., Proterozoic evolution of the Grenville orogen in North America: Boulder, Colorado, Geological Society of America Memoir 197, p. 525–547.
Merschat, A. H., Hatcher, R. D., Jr., and Davis, T. L., in press 2005, 3–D deformation, kinematics, and crustal flow in the northern Inner Piedmont, southern Appalachians, USA: Journal of Structural Geology, v. 27, p. YYYYY.
McBride, J. H., Hatcher, R. D., Jr., and Stephenson, W. J., 2005, Integrating seismic refl ection and geological data and interpretations across an internal basement massif: The southern Appalachian Pine Mountain window, USA Geological Society of America Bulletin, v. 117, p. XXXXX.

COLLABORATIONS WITHIN PAST 48 MONTHS

Brendan R. Bream	Paul D. Fullagar	Robert J. Hooper	G. Randy Keller
Richard D. Law	John H. McBride	Calvin F. Miller	Robert B. Neuman
A. Krishna Sinha	William A. Thomas		

M. S. and Ph. D. Supervisors:

Richard G. Stearns (M. S., Vanderbilt University); George D. Swingle (deceased) (Ph.D., University of Tennessee)

Biographical Sketch

Ramaswamy (Raju) S. Raghavan
raghavan@vt.edu
(540) 231-2761

Physics Department, Robeson Hall
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061-0435

PROFESSIONAL PREPARATION

Ph. D. Purdue University, Lafayette, IN, USA (1962-64)	Physics
M. Sc. University of Madras, India (1957-58)	Physics
M. A. University of Madras, India (1954-57)	Physics

PROFESSIONAL POSITIONS

Professor of Physics and Director, Institute of Particle Physics, Virginia Tech, 2004-preent
Consulting Scientist, Bell Labs, National Underground Laboratory, Gran Sasso, Italy (2001-)
Distinguished Member of Tech. Staff, Bell Labs, Lucent Technologies, Murray Hill NJ (1989-2001)
Member of Technical Staff, AT&T Bell Labs (1972-89)
Research Scientist, Physics-Department, Technical University Munich, Germany (1967-72)
Visiting Professor, University of Bonn, Germany (1966-67)
Research Fellow, Bartol Research Foundation, Swarthmore, PA. (1965)
Research Assistant, Dept. of Physics, Purdue University, Lafayette, IN (1962-64)
Junior Research Associate, Tata Institute of Fundamental Research, Bombay, India (1959-61)

Research Interests: Astroparticle Physics, theoretical neutrino phenomenology and experimental neutrino physics, theory and development of solar neutrino detectors, chemical technology of massive liquid scintillators, ultrahigh purity chemistry and material characterization & application to microelectronics technology

PUBLICATIONS

Most closely related to proposed project:

1. Solar Neutrinos—From Puzzle to Paradox, R. S. Raghavan, **Science,** 267, 45 (1995).
2. Inverse β-decay of ^{115}In -> ^{115}Sn* : A new possibility for detecting solar neutrinos from the proton-proton reaction, R. S. Raghavan, **Phys. Rev. Lett**. 37, 259 (1976).
3. Indium loaded scintillator for low energy solar neutrino spectroscopy, L. N. Pfeiffer, A. P. Mills, R. S. Raghavan and E. Chandross**, Phys. Rev. Lett**. 41, 63 (1978).
4. Probing Non-Standard Couplings of Neutrinos at the Borexino Detector, Z. Berezhiani, R. S. Raghavan and A.Rossi, **Nucl. Phys** A638, 62 (2002) (hep-ph/0111138)
5. Science and technology of BOREXINO: A real time detector for low energy solar neutrinos, G. Alimonti et al (BOREXINO Collab.), **Astroparticle Phys.** 16, 205 (2002) (hep –ex 0012030)
6. A New Model of Solar Neutrinos in Manifest violation of CPT Invariance R.S. Raghavan**, J. Cosmology and Astrtoparticle Physics** 08(2003)002, (astro-ph/ 0304331)
7. A new approach to the search for neutrinoless double beta decay, R. S. Raghavan, **Phys. Rev. Letters** 72, 1411 (1994).
8. Galactic supernova signal in Borex and measurement of ν_μ, ν_τ masses, A. Acker, S. Pakvasa and R. S. Raghavan, **Phys. Lett.** B238, 117 (1990).
9. Line spectroscopic approach to solar neutrinos by cryogenic bolometry of neutral and charged currents on ^{7}Li, R. S. Raghavan, P. Raghavan and T. Kovacs, **Phys. Rev. Letters** 71, 4295 (1993).
10. Measurement of the global radioactivity in the Earth by multidetector antineutrino spectroscopy, R. S. Raghavan, S. Schoenert, S. Enomoto, J. Shirai, F. Suekane and A. Suzuki, **Phys. Rev. Letters** 80, 635 (1998).

Synergistic activities:

- Regularly teach "Introduction to Nuclear and Particle Physics"
- Director, University Institute of Particle Physics and Astrophysics, VT
- Member of Bell Laboratories for past 30+ years; as such, the synergistic activities normal to faculty are replaced by innovative technology transfer from my pursuit of cutting-edge basic science techniques to critical industrial processes; also efforts to diversify the employee pool at Bell Labs
- International Advisory Committee, Int. Conferences on Hyperfine Interactions, Prague (1989), Bangalore (1986), Groningen (1983), Berlin (1980)
- Associate Editor, "Hyperfine Interactions" Journal (Balzer) (1983-90)
- Referee (Neutrino Physics, Nuclear Physics) , Phys. Rev. Lett, Phys. Rev. B,C

Awards:

- Fellow, American Physical Society
- Award of the American Chapter of the Indian Physics Association

Collaborators and Other Affiliations:

Collaborations (see above publications for list of members):

BOREXINO: (Bell Labs)-VT, Princeton U, U. Milano, U. Genova, LNGS National Lab, Technical U Munich, MPIK Heidelberg, Kurchatov Institute Moscow, JINR Dubna

LENS-Sol: VT, BNL, ORNL, UNC Chapel Hill, INR Moscow and Troitsk

HSD: VT, Duke U, U. Hawaii, LSU, U Tennessee

Ph. D. Thesis advisor: Prof. R. M. Steffen (+), Purdue University **Postdoctoral advisor:** Prof.

Postdoctoral advisees: Dr. Christian Grieb, Dr. Zheng Chang

ROBERT B. VOGELAAR
vogelaar@vt.edu
(540) 231-8735

Physics Department, Robeson Hall
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061

PROFESSIONAL POSITIONS

Associate Professor, Virginia Tech	1998-
Assistant Professor, Princeton University	1991-1998
Research Physicist, Princeton University	1989-1991

EDUCATION

PhD, California Institute of Technology	Physics	1989
M.S., California Institute of Technology	Physics	1984
B.S., Hope College	Physics, Philosophy	1982

ACADEMIC HONORS

Phi Beta Kappa
Charles E. Lake Memorial Award (Philosophy)
Sigma Xi Research Award (Physics)

RESEARCH AREAS

Neutrinos	measuring the solar neutrino flux to determine fundamental properties of neutrinos, Borexino, LENS, purification at the few atom level, novel detector development, off-axis neutrino beams
Symmetries	correlations in beta decay of polarized nuclei, ultra-cold neutrons, violations of CP and T invariance
Information Technologies	Dissemination of science and technology information on the Web

RELATED PUBLICATIONS

H.O. Back, C. Grieb, R.B. Vogelaar, "Calibration Source Locating System for the Borexino Solar Neutrino Experiment (submitted, NIM)

Borexino Collaboration (see below), "New Limits on Nucleon Decays into Invisible Channels with the Borexino Counting Test Facility," Phys Lett **B**563:23-34 (2003).

Borexino Collaboration (see below), "Study of the Neutrino Electromagnetic Properties with Prototype of Borexino Detector," Phys. Lett **B**563:35-47 (2003).

J. Benziger, M. Johnson, F. P. Calaprice, M. Chen, N. Darnton, F. Loeser and R.B. Vogelaar, "A Scintillator Purification System for a Large Scale Solar Neutrino Experiment," NIM **A**417:278 (1998).

M. Johnson, J. Benziger, C. Stoia, F. Calaprice, N. Darnton, F. Loeser, R.B. Vogelaar, "A Rn-222 source for low-background liquid scintillation detectors," NIM **A**414:459 (1998).

OTHER PUBLICATIONS

A. Saunders, J. M. Anaya, T. J. Bowles, B. W. Filippone, P. Geltenbort, R. E. Hill, M. Hino, S. Hoedl, G. E. Hogan, T. M. Ito, K. W. Jones, T. Kawai, K. Kirch, S. K. Lamoreaux, C.-Y. Liu, M. Makela, L. J. Marek, J. W. Martin, C. L. Morris, R. N. Mortensen, A. Pichlmaier, S. J. Seestrom, A. Serebrov, D. Smith, W. Teasdale, B. Tipton, R. B. Vogelaar, A. R. Young, and J. Yuan, "Demonstration of a solid deuterium source of ultra-cold neutrons," Phys. Letters **B**593 (2004) 55-60.

Borexino Collaboration (see below), "Measurements of extremely low radioactivity levels in Borexino," ASTROPARTICLE PHYSICS 2002, Vol 86, Iss 1, pp 1-25

Borexino Collaboration (see below), "Science and technology of Borexino: a real-time detector for low energy solar neutrinos," ASTROPARTICLE PHYSICS 2002, Vol 16, Iss 3, pp 205-234

Borexino Collaboration (see below), "Light propagation in a large volume liquid scintillator," NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT 2000, Vol 440, Iss 2, pp 360-371

Collaborators:

Borexino: H.O. Back, M. Balata, A. de Bari, T. Beau, A. de Bellefon, G. Bellini, J. Benziger, S. Bonetti, C. Buck, B. Caccianiga, L. Cadonati, F. Calaprice, G. Cecchet, M. Chen, A. Di Credico, O. Dadoun, D. D'Angelo, V.Yu. Denisov, A. Derbin, M. Deutsch, F. Elisei, A. Etenko, F. von Feilitzsch, R. Fernholz, R. Ford, D. Franco, B. Freudiger, C. Galbiati, F. Gatti, S. Gazzana, M.G. Giammarchi, D. Giugni, M. Goeger-Neff, A. Goretti, C. Grieb, C. Hagner, G. Heusser, A. Ianni, A.M. Ianni, H. de Kerret, J. Kiko, T. Kirsten, V. Kobychev, G. Korga, G. Korschinek, Y. Kozlov, D. Kryn, M. Laubenstein, E. Litvinovich, C. Lendvai, P. Lombardi, I. Machulin, S. Malvezzi, J. Maneira, I. Manno, D. Manuzio, G. Manuzio, F. Masetti, A. Martemianov, U. Mazzucato, K. McCarty, E. Meroni, L. Miramonti, M.E. Monzani, P. Musico, L. Niedermeier, L. Oberauer, M. Obolensky, F. Ortica, M. Pallavicini, L. Papp, L. Perasso, A. Pocar, O.A. Ponkratenko, R.S. Raghavan, G. Ranucci, A. Razeto, A. Sabelnikov, C. Salvo, R. Scardaoni, D. Schimizzi, S. Schoenert, H. Simgen, T. Shutt, M. Skorokhvatov, O. Smirnov, A. Sonnenschein, A. Sotnikov, S. Sukhotin, V. Tarasenkov, R. Tartaglia, G. Testera, V.I. Tretyak, D. Vignaud, R.B. Vogelaar, V. Vyrodov, M. Wojcik, O. Zaimidoroga, Yu.G. Zdesenko, G. Zuzel

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Synertistic Activities: High-school Senior Research Program; Elementary School Training Program; NSF fast-track for minority college-bound students via Summer Research; NEST web-page encyclopedia development; community meetings & presentations regarding DUSEL
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