CURRICULUM VITAE

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EDUCATION

B.A.	Gustavus Adolphus College St. Peter, MN	Physics, Mathematics	1972
Ph.D.	Ohio University Athens, OH	Physics (Nuclear Physics)	1983

Title of Dissertation: *Microscopic and Collective Model Analysis of Nucleon Scattering from* $^{54\text{-}56}$*Fe*

PROFESSIONAL MEMBERSHIPS

1983 - present	Member - American Physical Society
1986 - present	Member - American Association of Physics Teachers
1987 - present	Member - Sigma Xi
1999 - present	Fellow (Cphys, FinstP) - Institute of Physics (UK)

EXPERIENCE

September 2002 – present Professor of Physics
(September 1991 – September 2002 Associate Professor of Physics)
(February 1986 - September 1991 Assistant Professor of Physics)
Gustavus Adolphus College
St. Peter, MN

RESPONSIBILITIES: Teaching undergraduate courses in physics at all levels including both lectures and laboratory exercises; student advising; curriculum development; participation in faculty organization and committees. Active participation in faculty-student research including

several outside research grants. Specific courses taught in physics: introductory general physics for the liberal arts and courses for physics majors including Astronomy, introductory Classical Physics, Modern Physics theory, advanced Experimental Modern Physics, Advanced Mathematical Methods, Advanced Mechanics, Electromagnetic Theory, Nuclear Physics, Thermal and Statistical Physics, and Quantum Mechanics. Taught travel courses on Asian cultures and religions based in Malaysia during January Term, 1990, Fall Semester, 1991 and January Term 2004. Principal investigator for three National Science Foundation laboratory development projects. Chair, Faculty Committee on International Education, 1987-89. Chair, Faculty Committee on Academic Programs and Policy, 1994-95. Chair, Faculty Compensation Committee, 1997-99, 2005-2009. Chair, Physics Department, 2000-2002, 2007-2009.

October 2002 – March 2003

Fulbright Visiting Professor
School of Physics
Universiti Sains Malaysia
Penang, Malaysia

RESPONSIBILITIES: Teaching one course (advanced undergraduate electromagnetic theory); research collaboration with the Astronomy and Atmospheric Physics Research Unit; give presentations and conduct workshops related to physics education, specifically the use of the Just-in-Time Teaching (JITT) techniques and the development of web-based materials for teaching.

April 1997 – September 2005

Member, International Advisory Board
Physics Education
Institute of Physics Publishing
Bristol, England

RESPONSIBILITIES: Advise the Honorary Editor and Editorial Board on the content of issues and on the subject coverage in general, and make constructive suggestions on editorial policy; suggest topics/authors for suitable commissioned articles; referee articles submitted to the journal; make occasional contributions to “News and Comments”, “Reviews”, and other magazine sections of the journal.

June 1995 - April 1996

Visiting Lecturer
School of Physics
Universiti Sains Malaysia, Penang

RESPONSIBILITIES: Lecturer in two courses, Electricity and Magnetism I & II, conducted entirely in Bahasa Malaysia. Supervisor of two experiments in the second-year laboratory course. Research collaborator with the Astronomy and Atmospheric Physics Research Unit as well as the Radiation Biophysics Group. Assistant in the setup of a new instructional computer laboratory and network, including providing training for faculty and staff users.

June 1993 - June 1994

Director of Academic Computing
Gustavus Adolphus College
St. Peter, MN

RESPONSIBILITIES: Manage and maintain the day-to-day operation of the college's academic computing activities including: managing a staff of six full-time employees, responsibility for more than 90 work-study students, six public computing labs, and hundreds of personal computers and workstations all combined into a single network. Undertake establishment of policy and long range planning for information technology use on campus, and work in conjunction with other directors to ensure continuity and coordination of campus-wide uses of information technology.

September 1984 - January 1986

Postdoctoral Research Associate
Physics Department
University of Wisconsin-Madison

RESPONSIBILITIES: Supervision of graduate students involved in their dissertation projects. Design, performance and analysis of experiments in low-energy nuclear physics involving: the operation and maintenance of the University of Wisconsin polarized ion source and EN tandem accelerator; design and construction of experimental targets; detection of neutrons, gamma rays and charged particles; and the development and implementation of data analysis software.

September 1983 - June 1984

Instructor/Postdoctoral Research Associate
Physics Department, Ohio University
Athens, Ohio

RESPONSIBILITIES: Teaching two courses in general physics at the undergraduate level (one course for non-science majors, the other for physics/engineering majors) giving lectures, planning and designing laboratory experiments, and supervising graduate teaching assistants in laboratory instruction; design and performance of fast neutron elastic and inelastic scattering experiments; development of computer software for experimental data analysis both at Ohio University and in collaboration at Lawrence Livermore National Laboratory.

September 1978 - June 1982
September 1982 - August 1983

Graduate (Research) Associate
Physics Department
Ohio University
Athens, Ohio

RESPONSIBILITIES: Teaching undergraduate physics courses; design, conduct and analysis of experiments in scattering of fast neutrons from various target nuclei involving operation and maintenance of the Ohio University tandem Van de Graaff accelerator; apparatus design including construction and calibration of large-volume neutron scintillation detectors, electronics design and application; computer programming in FORTRAN, PL/1 and Assembler languages using the IBM 370, IBM 1800 and the OUAL-8000 minicomputer and associated hardware. Membership on university Radiation Safety Committee. Member of Graduate Appointments Committee.

June - September 1982

Physicist
E Division
Lawrence Livermore National Laboratory
Livermore, California

RESPONSIBILITIES: Performance of microscopic optical model computer calculations involving FORTRAN programming and the use of both CDC-7600 and CRAY-1 computers in an extension of existing software into a framework for the consistent calculation of both elastic and inelastic nucleon scattering.

November 1976 - January 1977
September 1977 - January 1978

Technical Training Coordinator
U.S. Peace Corps/Malaysia
177 Jalan Raja Muda, Kuala Lumpur, Malaysia

RESPONSIBILITIES: Design and conduct a teacher training course for prospective Peace Corps Math/science teachers including basic pedagogy, micro-teaching, orientation to the Malaysian education system, and actual classroom teaching practice; assistance in a Malaysian cross-cultural orientation and in teaching Bahasa Malaysia (the Malay language) to prospective volunteers.

July 1977 - September 1977

Consultant - Skill Trained Volunteer (STV)
Physics Teacher Training Program
Ohio University
Athens, Ohio

RESPONSIBILITIES: Acting as liaison between Ohio University, Peace Corps/Washington and Peace Corps/Malaysia; coordination of an intensive preparatory physics course for prospective Peace Corps teachers including design and construction of laboratory apparatus to enable trainees to carry out all of the Malaysian Modern Physics (Forms IV and V) experiments.

January 1975 - December 1975

U.S. Peace Corps Volunteer -
Curriculum Development Officer
National University of Malaysia,
Kuala Lumpur, Malaysia

RESPONSIBILITIES: Design of curriculum and materials for a one-year,pre-university physics course including authorship of a detailed, weekly, bilingual, educational objective-based syllabus and a laboratory guide; coordination of implementation of the curriculum by conducting workshops for teachers from remote teaching centers; on-site visits to the centers for classroom teaching and teacher consultations.

November 1972 - December 1974 U.S. Peace Corps Volunteer - teacher
January 1976 - November 1976 Kamil Secondary School
Pasir Puteh, Kelantan, Malaysia

RESPONSIBILITIES: Teaching high school physics and chemistry in Bahasa Malaysia (the Malay language); supervision of a student science club; teaching of English as a second language; design and construction of a photographic darkroom/lab; instruction of photography and darkroom techniques; supervision of photography for a school yearbook; supervision of a student chess club; coaching of basketball, tennis and volleyball.

LANGUAGE SKILLS

Languages spoken fluently:	English, Bahasa Malaysia (Malay)
Languages read:	English, French, Spanish, Malay (in Roman or Arabic script)
Other languages studied:	Arabic, Chinese

GRANTS

1. Northwest Area Foundation Grant of Research Corporation, for Faculty/Student Research: *Analyzing Power Measurements in Radiative Capture; Microscopic DWBA Analysis of Nucleon Scattering* ($20,000), Gustavus Adolphus College (1987-1989)

2. National Science Foundation College Science Instrumentation Grant: *Experimental Modern Physics Laboratory Development Project* ($55,340), Gustavus Adolphus College (1987-1989)

3. Minnesota Supercomputer Institute Grant for Research Use of Cray-2 Supercomputer: *Microscopic Distorted Wave Born Approximation Study of Nucleon Scattering* ($8000), Gustavus Adolphus College (1987-1988)

4. Bush Foundation Type I Faculty Development Grant: *Development of a Course in Asian Cultures and Religions in Malaysia* ($4000), Gustavus Adolphus College (1988)

5. National Science Foundation Research at Undergraduate Institutions Grant: *Nuclear Reaction Studies at Low and Intermediate Energies* ($56,135), Gustavus Adolphus College (1989-1991)

6. National Science Foundation Instrumentation and Laboratory Improvement Grant: *Microcomputer Interfaced Experiments in Introductory Physics Laboratories* ($87,970), Gustavus Adolphus College (1990-1992)

7. National Science Foundation Instrumentation and Laboratory Improvement Grant: *Enhancements in Experimental Nuclear Physics* (co-Principal Investigator, $36,084), Gustavus Adolphus College (1994-1996)

8. National Science Foundation Major Research Instrumentation Grant: *Acquisition of Equipment for Acoustical, Optical and Computational Scattering Studies* (co-Principal Investigator, $145,628), Gustavus Adolphus College (1997-2000)

9. Presidential Faculty/Student Research Collaboration: *Study of Optical Imaging by Reflection through Random Media* ($8,370), Gustavus Adolphus College (1999)

10. J. William Fulbright Foreign Scholarship Board: *Lecturing/Research Fulbright Scholar Award* ($26,680), School of Physics, Universiti Sains Malaysia (2002-2003)

11. Presidential Faculty/Student Research Collaboration: *Study of Optical Imaging by Reflection through Random Media* ($7,440), Gustavus Adolphus College (2005)

12. Presidential Faculty/Student Research Collaboration: *Study of Optical Imaging by Reflection through Random Media* ($6,000), Gustavus Adolphus College (2008)

CONTRIBUTED PAPERS

1. *Elastic and Inelastic Scattering of 24 MeV Neutrons from* ^{54}Fe*,*
Bull. Am. Phys. Soc., Vol. 26, No. 5(1981), p.707.

2. *Time-of-Flight Resolution in Fast Neutron Scattering Experiments,*
Bull. Am. Phys. Soc., Vol. 26, No. 6(1981), p.802.

3. *Elastic Scattering of 7.2 and 24 MeV Neutrons from* ^{208}Pb*,*
Bull. Am. Phys.Soc., Vol.27, No. 4(1982), p.543.

4. *Elastic and Inelastic Scattering of 20-26 MeV Neutrons from* ^{12}C*,*
Bull. Am. Phys. Soc., Vol. 27, No. 4(1982), p.544.

5. *Calibration of the Response and Efficiency of an NE-213 Neutron Detector for Fast Neutron Spectrometry,* Bull. Am. Phys. Soc., Vol. 27, No. 5(1982), p.629.

6. *Test of the Isospin Properties of a Microscopic Optical Model for Nucleon Scattering from* ^{208}Pb*,* Proc. Conf. Nucl. Structure, Amsterdam, Vol. I(1982), p.291.

7. *Analysis of Fast Neutron Scattering from* ^{54}Fe *and* ^{56}Fe*,*
Bull. Am. Phys. Soc., Vol. 27, No. 7(1982), p.716

8. *Microscopic Optical Model for Nucleon Elastic Scattering on Pb,*

Bull. Am. Phys. Soc., Vol. 27, No. 7(1982), p.722.

9. *Fast Neutron Inelastic Scattering from $^{54\text{-}56}Fe$,*
Bull. Am. Phys. Soc., Vol. 28, No. 4(1983), p.648.

10. *Momentum-Space Comparison of Microscopic Optical Potentials for 20-26 MeV Neutron Scattering from ^{54}Fe,* Bull. Am. Phys. Soc., Vol. 28, No. 4(1983), p.649.
11. *Microscopic DWBA Analysis of Fast Neutron Inelastic Scattering from ^{54}Fe and ^{56}Fe,* Bull. Am. Phys. Soc., Vol. 28, No. 7(1983), p.983.

12. *Elastic and Inelastic Scattering of Neutrons from ^{16}O,*
Bull. Am. Phys. Soc., Vol. 28, No. 7(1983), p.984.

13. *Use of a Fast Minicomputer for On-line Data Analysis in Neutron Time-of-Flight Measurements,* Bull. Am. Phys. Soc., Vol. 29, No. 5(1984), p.911.

14. *Microscopic Optical Model Analysis of Nucleon Elastic Scattering from C,*
Bull. Am. Phys. Soc., Vol. 29, No. 4(1984), p.749.

15. *Measurement of the Vector and Tensor Analyzing Powers $A_y(\theta)$ and $A_{yy}(\theta)$ in the $^2H(d,\gamma)^4He$ Reaction for E_d = 10 MeV,* Proc. 6th Int'l Symp. on Polarization Phenomena in Nucl. Physics, Osaka(1985) p.178.

16. *Microscopic DWBA Analysis of Nucleon Scattering from ^{89}Y,*
Bull. Am. Phys. Soc., Vol. 30, No. 8(1985), p.1251.

17. *Measurement of the Vector and Tensor Analyzing Powers in the $^2H(d, \gamma)^4He$ Reaction at 10 MeV,* Bull. Am. Phys. Soc., Vol. 30, No. 8(1985), p.1268.

18. *Measurement of the Vector and Tensor Analyzing Powers in the $^2H(d, \gamma)^4He$ Reaction at 2.5 MeV,* Bull. Am. Phys. Soc., Vol.32, No. 8(1987), p.1547.

19. *Microscopic DWBA Analysis of Nucleon Scattering from ^{16}O,*
Bull. Am. Phys. Soc., Vol.33, No.8(1988), p.1570.

20. *An Experimental Modern Physics Course for Undergraduates,*
AAPT Announcer, Vol. 20, No. 2 (1990) p.72

21. *Energy Dependence of the $^2H(d,\gamma)^4He$ Reaction at Low Energies,*
Bull. Am. Phys. Soc., Vol 36, No. 4(1991), p.1400

22. *A Computer-Based Homework System with Individual Problem Solving and Instructor Diagnostics*, Bull. Am. Phys. Soc., Vol 38, No. 2(1993), p.1004

23. *Yes, It Is Possible to Measure g Accurately Using an Inclined Air Track,*
AAPT Announcer, Vol. 23, No. 2 (1993) p.93

24. *The Problem of Lunar Crescent Visibility*, AAPT Announcer, Vol. 27, No.2 (1997) p. 92

25. *MODELFIT: Fostering Student Understanding of Computerized Data Analysis*, AAPT Announcer, Vol. 29, NO. 2 (1999) pp123-124

26. *Low-Coherence Optical Reflectometer*, Bull. Am. Phys. Soc., Vol 45, No. 1 (2000), p. 999

27. *Pre-Lab Exercises Using Physlets and the World Wide Web*, AAPT Announcer, Vol. 30, No. 2 (2000) p. 119

28. *The Physlet Virtual Pre-Laboratory*, AAPT Announcer, Vol. 31, No. 2 (2001) p. 93

29. *Incorrect Results from Weighted Fits to Experimental Data*, AAPT Announcer, Vol. 31, No. 2 (2001) pp. 109-110

30. *Using Physlets© to Enhance Physics Teaching*, PERFIK 2002, Kuala Lumpur, December 21, 2002.

31. *Bilingual Physlet Pages to Aid the Language Transition in Malaysia*, AAPT Announcer, Vol. 33, No. 2 (2003) p.159

32. *Superstrings: A Theory of Everything for Everyone?*, AAPT Summer Meeting, (2007).

PUBLICATIONS

1. *The Ohio University Beam Swinger Facility*, R.W. Finlay, C.E. Brient, D.E. Carter,A. Marcinkowski, S. Mellema, G. Randers-Pehrson and J. Rapaport, Nuclear Instruments and Methods **198**, 197 (1982).

2. *Neutron Emission Cross Sections at 25.7 MeV:* ^{51}V, ^{56}Fe, ^{65}Cu, ^{93}Nb, *and* ^{209}Bi, A. Marcinkowski, R.W. Finlay, G. Randers-Pehrson, C.E. Brient, R. Kurup, S. Mellema, A. Meigooni and R. Tailor, Nucl. Sci. Eng. **83**, 13 (1983).

3. *The Isospin Dependence of the Microscopic Optical Model for Nucleon Scattering*, F.S. Dietrich, R.W. Finlay, S. Mellema, F. Petrovich and G. Randers-Pehrson, Phys. Rev. Lett. **51**, 1629 (1983).

4. *Microscopic and Conventional Optical Model Analysis of Fast Neutron Scattering from* $^{54\text{-}56}Fe$, S. Mellema, F.S. Dietrich, R.W. Finlay and F. Petrovich, Phys. Rev. **C28**, 2267 (1983).

5. *Isovector Effects in Nucleon Inelastic Scattering in a Density Dependent Folding Model*, S. Mellema, F.S. Dietrich, R.W. Finlay and F. Petrovich, Phys. Rev. **C29**, 2385 (1984).

6. *Efficiency Calibration of Large Volume Liquid Scintillation Detectors*, S. Mellema and J.S. Petler, Nucl. Instruments and Methods A242, 265 (1986).

7. *Evidence for Multipolarities Other Than E2 in the $^{2}H(d,\gamma)^{4}He$ Reaction*, S. Mellema, T.R. Wang and W. Haeberli, Phys. Lett. **166B**, 282 (1986).

8. *Neutron Inelastic Scattering from $^{54\text{-}56}Fe$*, S. Mellema, R.W. Finlay and F. S. Dietrich, Phys. Rev. **C33**, 487 (1986).

9. *Tensor Force Effects in $^{2}H(d, \gamma)^{4}He$ Reaction and the D State of ^{4}He*, S. Mellema, T.R. Wang and W. Haeberli, Phys. Rev. **C34**, 2043 (1986).

10. *Microscopic Distorted-Wave Approximation Study of Low-Energy Nucleon Scattering from ^{89}Y*, S. Mellema, J.S. Petler, R.W. Finlay, F.S. Dietrich, J.A. Carr and F. Petrovich, Phys. Rev. **C36**, 577 (1987).

11. *People in Physics - Interview with Steve Mellema*, Physics Education, Vol. 35, No. 6, November 2000, pp. 463-468.

12. *A Physics Lecture for the 21st Century*, Physics Education, Vol. 36, No. 4, July 2001, pp. 306-311.

13. *Companion Website (and CD-ROM) to 'Physics' by James Walker*, D. Reid, G. Novak, A. Gavrin, W. Christian, C. Niederriter, S. Mellema, C. Adler, G. Terrell, T. O'Kuma, D. Maloney, C. Hieggelke and J. Walker, Prentice-Hall, ©2001, http://cwx.prenhall.com/bookbind/pubbooks/walker2/

14. *Companion Website (and CD-ROM) for 'College Physics 5th Edition'*, by J. Wilson and A. Buffa, Prentice Hall ©2003 http://www.prenhall.com/wilson5/

15. *Companion Website (and CD-ROM) for 'Astronomy – A Beginner's Guide to the Universe'*, by E. Chaisson and S. McMillan, Prentice Hall ©2003

16. *Using physlets© to enhance physics teaching*, Steven H. Mellema, Jurnal Fizik Malaysia (Malaysian Journal of Physics) , Vol 24, No. 2 (2003).

BOOK REVIEWS AND SHORT ARTICLES

1. Review of *States of Matter, States of Mind*, by Allan Barton, 1997 Bristol: Institute of Physics Publishing, in *Physics Education*, Vol. 33, No. 1, January 1998, pp. 68-69.

2. Review of *Black Holes, Wormholes and Time Machines*, by Jim Al-Khalili, 1999 Bristol: Institute of Physics Publishing, in *Physics Education*, Vol. 35, No. 3, May 2000, p.213.

3. *AAPT Summer Meeting*, Physics Education, Vol. 35, No. 6, November 2000, pp. 374-375.

4. *Book Styles and Cultures: What We Expect in the USA*, Physics Education, Vol. 36, No. 3, May 2001, pp. 264-265.

5. *AAPT Summer Meeting: Just-In-Time Teaching*, Physics Education, Vol. 36, No. 5, September 2001, p. 365.

6. *Malaysia: Controversy over the language medium for science teaching*, Physics Education, Vol. 37, No. 5, September 2002, p. 366.

7. *Rewards for curriculum change*, Physics Education, Vol. 38, No. 2, March 2003, pp. 85-86.