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Curriculum Vitae

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Education:

B.S.	Tunghai University (Formosa), June 1961
M.A.	University of Southern California, January 1966
Ph.D.	University of Southern California, June 1968

Experience:

1961-63	Teaching Assistant, Tunghai University (Formosa)
1963-66	Teaching Assistant, University of Southern California
1964-68	Research Assistant, University of Southern California
1966-69	Junior Lecturer, University of Southern California
1968-69	Postdoc Research Associate, University of Southern California
1969-72	Research Associate, Stanford University
1972-74	Guest Worker, National Bureau of Standards
1972-74	Senior Research Associate, University of Maryland
1974-80	Assistant Professor, University of Maryland
1980-86	Associate Professor, University of Maryland
1982-83	Sabbatical leave at SLAC Laboratory, Stanford University
1986-	Professor, University of Maryland

Publications:

See Attached List

Professional Activities:

Member: Sigma Pi Sigma
Sigma Xi
American Association of Physics Teachers
American Physical Society

Reviewer, Physical Review Letters, Physical Review C, and Physics Letters
Reviewer, research proposals for National Science Foundation
CEBAF Hall A Co-manager, 1987-88
Member, Board of Directors of MIT-Bates User Group, BLAUGI, 1988-90
Member, CEBAF Hall A Steering Committee, 1989-91
Member, CEBAF Hall A Coordinating Committee, 1991-93
Member, CEBAF Hall A Technical Committee, 1991-94

Member, CEBAF Users Board of Directors, 1992-94
Chair and Member, CEBAF Hall Coordinating Committee, 1995-97
Member, Expert Review Panel for Kentucky DOE/EPSCOR Program, 1995-

Honors Received:

Tuition Scholarship Awarded by Tunghai University, 1958-61
Prize Awarded for Highest Scholarship in College of Science, Tunghai University, 1961
General Research Board Semester Research Award, Fall 1988

Theses Directed:

Collins, Michael T., Decay modes of the isoscalar quadrupole resonance in ^{58}Ni and the An isotopes, Ph.D. thesis (1980).

Boberg, Paul R., The momentum transfer and target mass dependence of the $(e, e'p)$ reaction on carbon-12 and copper-63, Ph.D. thesis (1992).

Naples, Donna L., A-Dependence of photoproduced jets and comparison with hadroproduction, Ph.D. thesis (1993).

Halli, Chafiq, Studies of hydrogen and deuterium di-jet photoproduction, Ph.D. thesis (1997).

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A. **Papers published (or accepted for publication) in refereed journals**

1. Physics research

1) Investigation of three- and four-nucleon system, E. Bar-Avraham, R.F. Carlson, C.C. Chang, H.H. Forster, C.C. Kim, J.R. Richardson, I. Slaus, P. Tomas, W.T.H. van Oers, and J.W. Verba, J. Phys. Soc. Japan **24**, 80 (1967).

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14) Elastic scattering of vector polarized deuterons by ^{4}He, C.C. Chang, H.F. Glavish, R. Avida, and R.N. Boyd, Nucl. Phys. **A212**, 189 (1973).

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17) Resonant structure observed in the ^{3}He$(\tau,\gamma)^{6}$Be capture reaction, E. Ventura, J. Calarco, C.C. Chang, E.M. Diener, E. Kuhlman, and W.E. Meyerhof, Nucl. Phys. **A219**, 157 (1974).

18) The ^{6}Li$(p,2p)^{5}$He reaction at 100 MeV, R. Bhowmik, C.C. Chang, P.G. Roos, and H.D. Holmgren, Nucl. Phys. **A226**, 365 (1974).

19) Gamma rays observed from 100 MeV protons interacting with ^{56}Fe and ^{58}Ni, C.C. Chang, N.S. Wall, and Z. Fraenkel, Phys. Rev. Lett. **33**, 1493 (1974).

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B. **Papers presented at scientific meeting**

1. Invited papers

General features of nuclear reactions induced by light-ions with energies in the range 20-90 MeV/nucleon, C.C. Chang, Asilomar APS Meeting, Bull. Am. Phys. Soc. **23**, 932 (1978).

Pre-equilibrium exciton model calculations, C.C. Chang, 2nd Conference on Nuclear Reaction Mechanism, June 18-21, 1979, Varenna (Como), Italy.

Decay modes of isoscalar giant quadrupole resonance, C.C. Chang, Nuclear Structure Gordon Conference, July 9-13, 1979, Tilton School, NH.

Techniques in hadron induced giant multipole resonance study, C.C. Chang, Giant Multipole Resonance Topical Conference, Oct. 15-17, 1979, Oak Ridge, TN.

Importance of the single nucleon-nucleon scattering in intermediate energy proton induced reactions, C.C. Chang, Seattle ACS meeting, March 22-24, 1983.

Hadronization of quarks at CEBAF energy, C.C. Chang, CEBAF 1987 Summer Workshop, June 22-26, 1987, Newport News, VA.

HRS2 letters of intent and collaborations, C.C. Chang, CEBAF PAC2 Meeting, October 8-10, 1987, Newport News, VA.

Semi-inclusive electroproduction of hadrons, C.C. Chang, Spring School on Medium and High-Energy Nuclear Physics, Taipei, Taiwan, May 16-20, 1988.

Photoproduction of high p_T jets, C.C. Chang, International Conference on Medium and High-Energy Nuclear Physics, Taipei, Taiwan, May 23-27, 1988.

Hall A working group report, C.C. Chang, CEBAF 1988 Summer Workshop, Newport News, VA, June 20-24, 1988.

Deep-inelastic (x-scaling) scattering, C.C. Chang, Hall A Users' Meeting, University of Virginia, Charlottesville, VA, October 24-25, 1988.

Shower counters for Hall A spectrometers, C.C. Chang, Hall A Users' Meeting, CEBAF, Newport News, VA, January 22-24, 1991.

Electroproduction of kaons in the deep inelastic scattering region, C.C. Chang, 1992 CEBAF Summer Workshop, Newport News, VA, June 15-19, 1992.

A-dependence in photoproduced jets, C.C. Chang *et al.*, presented by Donna Naples for E683 collaboration, invited talk at 28th Conference on QCD and High Energy Hadronic Interactions, Les Arcs, Savoie, France, March 20-27, 1993.

A-dependence of photoproduction of jets and comparison with hadroproduction, C.C. Chang, Institute for Nuclear Theory - Fermi National Accelerator Laboratory Workshop, Perspectives of High Energy Strong Interaction Physics at Hadron Facilities, FNAL, Batavia, IL, August 4-11, 1993.

Prospects for a solar neutrino detector with LiI(Eu), C.C. Chang and C.Y. Chang, Third International Workshop on Theory and Phenomenology in Astroparticle and Underground Physics, Assergi, Italy, September 19-33, 1993.

A-dependence of jet photoproduction, C.C. Chang, Fifth Conference on the Intersections of Particle and Nuclear Physics, St. Petersburg, FL, May 31 - June 6, 1994.

Lithium iodide for solar neutrino detection, C.Y. Chang (presenter), C.C. Chang, G. Collins, D.M. Mustillo. J.R. Swider, W.B. Walters, F.T. Avignone, and G. Giacomelli, ICHEP Glasgow and '94 IUPAP Meeting, July 20-27, 1994.

Interaction of high energy photons with nucleons and nuclei, C.C. Chang and H.D. Holmgren (presenter), 7th International Conference on Nuclear Reaction Mechanisms, Varenna, Italy, June 6-11, 1994.

A new solar neutrino experiment with LiI(Eu), Southeast Section of the APS Meeting, 1998.

2. Colloquia, Seminars, and Special Lectures

Study of A=3 and 6 nuclei by radiative capture reactions, 1973; Seminar, National Bureau of Standards, Gaithersburg, Maryland

Recent status of the excited state in ^{3}He, February 1973; Seminar, University of Maryland, College Park, Maryland.

Mass-3 excited states, November 1973; Seminar, Georgetown University, Washington, D. C.

Quasi-free scattering and reaction on ^{6}Li and ^{7}Li at 100 MeV proton bombarding energy, February 1974; Seminar, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Study of giant quadrupole resonance via inelastic deuteron scattering, November 1974; Seminar, S.U.N.Y., Stony Brook, New York.

Giant quadrupole resonances in light nuclei via deuteron inelastic scattering, September 1975; Seminar, Institut de Physique Nucleaire, Orsay, France.

Single nucleon pick-up and knock-out reactions from $1p$ shell nuclei, October 1975; Seminar, Kernfysisch Versneller Institut, Groningen, Netherlands.

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Energy dissipation in various nuclear reactions, November 1978; Seminar, UCLA, Los Angeles, California.

General features of nuclear reactions induced by light-ions with energies in the range 20-90 MeV/nucleon, December 1978; Seminar, S.U.N.Y., Stony Brook, New York.

Global view of nuclear reaction mechanism at intermediate energy, February 1979; Colloquium, The Johns Hopkins University, Baltimore, Maryland.

Decay of giant quadrupole resonance in medium mass nuclei, June 1979; Seminar, Max-Planck-Institute für Kernphysik, Heidelberg, Germany.

Decay modes of isoscalar giant quadrupole resonance, June 1979; Seminar, Institut für Kernphysik, Jülich, Germany.

Excitation and decay of giant quadrupole resonance, June 1979; Seminar, Institut de Physique Nucleaire, Orsay, France.

Reaction mechanisms and the continuous spectra in nuclear reactions, January 1980; Seminar, Ohio State University, Columbus, Ohio.

Reaction mechanisms and the continuous spectra in nuclear reactions, February 1980; Nuclear Theory Seminar, University of Maryland.

Excitation and decay of the new giant multipole resonances, December 22, 1980 to January 10, 1981; Lectures, Winter School in Nuclear Physics, Beiging, China.

Importance of the single nucleon-nucleon scattering in intermediate energy proton induced reactions, November 4, 1982; Seminar, Lawrence Livermore Laboratory, Livermore, California.

Deep inelastic scattering and the nucleon structure functions, November 17, 1983; Informal Seminar (lecture), Experimental Nuclear Physics Group, University of Maryland.

A-dependence of the nuclear structure function, November 28, 1983; Seminar, Experimental Nuclear Physics Group, University of Maryland.

The nucleon structure function inside the nucleus, December 7, 1983; Seminar, National Bureau of Standards, Gaithersburg, Maryland.

Nucleon structure function: results from deep inelastic lepton scattering, March 29, 1984; Colloquium, Catholic University, Washington, DC.

Are nucleons inside a nucleus larger than free nucleons?, March 4, 1985; Seminar, George Washington University, Washington, DC.

High-$p_\perp$ jets with real photons, July 16, 1987; Seminar, NPAS PEP Summer Study at SLAC, Stanford, CA.

(e, e') and deep inelastic scattering, October 20, 1988; Special Lecture to Experimental Nuclear Physics Group, University of Maryland.

Recent results from fermilab E745 experiment, February 1, 1989; Seminar, Nuclear Theory Group, University of Maryland.

PEGASYS Project, Part I - experimental setup, February 17, 1989; Informal Seminar, Experimental Nuclear Physics Group, University of Maryand.

PEGASYS Project, Part II - physics program, February 21, 1989; Informal Seminar, Experimental Nuclear Physics Group, University of Maryand.

Photoproduction of high p_T jets, April 6, 1989; Colloquium, Kent State University, Kent, OH.

The A-dependence study of charm production, July 18, 1991; Seminar, E687 Collaboration Meeting, Fermilab.

Direct measurement of the primordial k_T distribution, February 14, 1992; Seminar, Nuclear Theory Group, University of Maryland.

Preliminary results from photoproduction of high p_t jets at Fermilab, March 1992 Seminar, High Energy Group, University of Maryland.

Informal report on Theory and Phenomenology in Astro-particle and Underground Physics Workshop, October 4, 1993 Seminar, Experimental Nuclear Physics Group, University of Maryland.

Perspectives on solar neutrino experiments, October 15, 1993 Seminar, George Washington University, Washington, DC.

Diffractive dissociation of pions at high energy, July 15, 1994 Seminar, Nuclear Theory Group, University of Maryland.

The Experimental Physical Program at TJLab, July 24, 1998 Seminar, Academia Sinica, Taiwan.

Prospects for a solar neutrino detector with LiI(Eu), October 12, 1998 Seminar, Institute of High Energy Physics, Beijing, PRC.

Physics case for LiI(Eu) crystal calorimeter, October 13, 1998 Seminar, Institute of High Energy Physics, Beijing, PRC.

Prospects for a solar neutrino detector with LiI(Eu), October 16, 1998 Seminar, China Institute of Atomic Energy, Beijing, PRC.

A new solar neutrino experiment with LiI(Eu), February 15, 1999, Seminar, Experimental Nuclear Physics Group, University of Maryland.

3. Contributed papers

Angular correlation from ^{3}He$(p,pd)P$ at 44.5 MeV, H.H. Forster, E. Bar-Avraham, C.C. Chang, C.C. Kim, J.R. Richardson, P. Tomas, W.T.H. van Oers, and J.W. Verba, Bull. Am. Phys. Soc. **12**, 1139 (1967).

Analysis of the ^{3}He$(p,d)2p$ final state interaction, C.C. Chang and H.H. Forster, Bull. Am. Phys. Soc. **12**, 1139 (1967).

Proton-induced charged particle reactions on ^{14}N at 46 MeV, H.H. Forster, E. Bar-Avraham, C.C. Chang, J.H. Hokhikian, C.C. Kim, J.M. Cameron, M.B. Epstein, and P. Tomas, Bull. Am. Phys. Soc. **13**, 606 (1968).

Experimental study of the proton-proton final state interaction in the ^{3}He$(p,pd)P$ reaction at 46.5 MeV, H.H. Forster, C.C. Kim, C.C. Chang, E. Bar-Avraham, P. Tomas, J.W. Verba, and J.R. Richardson, Bull. Am. Phys. Soc. **13**, 1366 (1968).

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Experimental study of the ^{2}H$(p,\gamma)^3$He reaction, C.C. Chang, W.E. Meyerhof, M.C. Bertin, and R.G. Hirko, Bull. Am. Phys. Soc. **14**, 1167 (1969).

New levels in ^{12}N observed in the ^{14}N$(p,d)^{12}$N reaction at 46 MeV, C.C. Kim, C.C. Chang, H.H. Forster, J. Hokhikian, and L.C. Welch, Bull. Am. Phys. Soc. **14**, 1167 (1969).

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Investigation and analysis of the ^{14}N$(p,2p)^{13}$C reaction at 46 MeV, L.C. Welch, H.H. Forster, C.C. Kim, C.C. Chang, D.W. Devins, and P.A. Deutchman, Bull. Am. Phys. Soc. **15**, 521 (1970).

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High-lying levels of ^{11}C, B.A. Watson, C.C. Chang, M. Hasinoff, and S.S. Hanna, Bull. Am. Phys. Soc. **15**, 1598 (1970).

The ^{14}C(^{3}He,γ)^{17}O capture reaction, C.C. Chang and E. Ventura, Bull. Am. Phys. Soc. **15**, 1599 (1970).

Study of the ^{10}B(^{3}He,n)^{12}N reaction and levels in ^{12}N up to an excitation energy of 11.6 MeV, C.C. Chang, Bull. Am. Phys. Soc. **15**, 1653 (1970).

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G. **Contracts, Grants, and Proposals**

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Co-Principal Investigator on NSF Grant #PHY-9220690, (Experimental Nuclear Physics Research Program) (Jan. 1, 1993-June 30, 1996; $1,950,000), Roos, Breuer, Chang, Chant, Holmgren, and Kelly.

Principal Investigator on CEBAF Grant (Construction of the Lead Glass Shower Counters for the Hall A High Resolution Spectrometers by the University of Maryland) (September 30, 1993-July 31, 1995; $78,600) C.C. Chang and P.E. Markowitz.

REU Supplement to NSF Grant PHY-9220690 (Research Experiences for Undergraduates) for Experimental Nuclear Physics Research Program ($4,000 for 1993; $4,000 for 1994; $4,000 for 1995), P.G. Roos, N.S. Chant, C.C. Chang, H. Breuer, H.D. Holmgren, and J.J. Kelly.

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Co-Principal Investigator: National Science Foundation Grant 9971819 (Experimental Nuclear Physics Research Program, 1999-2002 ($1,907,346), with N. S. Chant, E. J. Beise, C. C. Chang, H. Breuer, J. J. Kelly, and P. G. Roos.

REU Supplement Proposal to NSF Grant PHY-9971819 (Research Experiences for Undergraduates) for Experimental Nuclear Physics Research Program ($31,000 for 1999-2002), N. S. Chant, E. J. Beise, C. C. Chang, H. Breuer, J. J. Kelly, and P. G. Roos.

Co-Principal Investigator: National Science Foundation Grant PHY-0140010, Experimental Nuclear Physics Research Program, 2002-05 ($1,541,667), P. G. Roos, E. J. Beise, H. Breuer, C. C. Chang, and J. J. Kelly.

Proposed REU Supplement to NSF Grant PHY-0140010 (Research Experiences for Undergraduates) for Experimental Nuclear Physics Research Program ($11,000), P. G. Roos, E. J. Beise, C. C. Chang, H. Breuer, J. J. Kelly.

Chia-cheh Chang

Courses Taught at the University of Maryland

1974	Fall	Physics 748	Experimental Nuclear Physics Seminar	(1)
1975	Spring	Physics 748	Experimental Nuclear Physics Seminar	(1)
1975	Fall	Physics 293	Introductory Physics	(3)
1976	Spring	Physics 294	Introductory Physics	(3)
1976	Fall	Physics 293	Introductory Physics	(3)
1977	Spring	Physics 293	Introductory Physics	(3)
		Physics 499	Special Problems in Physics	(5)
1977	Fall	Physics 293	Introductory Physics	(3)
		Physics 499A	Special Problems in Physics	(2)
		Physics 499B	Special Problems in Physics	(1)
		Physics 899	Doctoral Thesis Research	(5)
1978	Spring	Physics 294	Introductory Physics	(3)
		Physics 499B	Special Problems in Physics	(1)
		Physics 899	Doctoral Thesis Research	(8)
1978	Fall	Phys 429/621	Graduate Laboratory	(3)
		Physics 899	Doctoral Thesis Research	(8)
1979	Spring	Phys 429/621	Graduate Laboratory	(3)
		Physics 899	Doctoral Thesis Research	(5)
1979	Fall	Phys 429/621	Graduate Lab	(3)
		Physics 748	Experimental Nuclear Physics Seminar	(1)
		Physics 899	Doctoral Thesis Research	(8)
1980	Spring	Phys 429/621	Graduate Lab	(3)
1980	Fall	Physics 263	General Physics	(4)
		Physics 748	Experimental Nuclear Physics Seminar	(1)
		Physics 798	Independent Study	(3)
1981	Spring	Physics 441	Nuclear Physics	(3)
		Physics 748	Experimental Nuclear Physics Seminar	(1)
		Physics 798	Independent Study	(3)
1981	Fall	Physics 263	General Physics	(4)
1982	Spring	Physics 161	General Physics	(3)
		Physics 899	Doctoral Thesis Research	(3)
1982	Fall	Sabbatical Leave		
1983	Spring	Sabbatical Leave		

Courses Taught at the University of Maryland (continued)

1983	Fall	Physics 161	General Physics	(3)
		Physics 748	Experimental Nuclear Physics Seminar	(1)
1984	Spring	Physics 262	General Physics	(4)
		Physics 299	Special Problems in Physics	(3)
		Physics 748	Experimental Nuclear Physics Seminar	(1)
1984	Fall	Physics 741	Nuclear Physics: Survey	(3)
		Physics 748	Experimental Nuclear Physics Seminar	(1)
1985	Spring	Physics 395	Advanced Experiments	(3)
		Physics 798	Independent Study	(1)
1985	Fall	Physics 741	Nuclear Physics: Survey	(3)
		Physics 798	Independent Study	(1)
		Physics 499B	Special Problems in Physics	(3)
1986	Spring	Physics 395	Advanced Experiments	(3)
		Physics 899	Doctoral Thesis Research	(3)
1986	Fall	Physics 741	Nuclear Physics: Survey	(3)
		Physics 899	Doctoral Thesis Research	(4)
		Physics 299	Special Problems in Physics	(2)
1987	Spring	Physics 395	Advanced Experiments	(3)
		Physics 899	Doctoral Thesis Research	(8)
1987	Fall	Physics 741	Nuclear Physics: Survey	(3)
		Physics 899	Doctoral Thesis Research	(8)
		Physics 748	Experimental Nuclear Physics Seminar	(1)
1988	Spring	Physics 395	Advanced Experiments	(3)
		Physics 899	Doctoral Thesis Research	(7)
1988	Fall	Physics 899	Doctoral Thesis Research General Research Board Grant	(2)
1989	Spring	Physics 395	Advanced Experiments	(3)
		Physics 899	Doctoral Thesis Research	(2)
1989	Fall	Physics 262	General Physics	(4)
		Physics 899	Doctoral Thesis Research	(2)
1990	Spring	Physics 395	Advanced Experiments	(3)
		Physics 899	Doctoral Thesis Research	(2)
1990	Fall	Physics 161	General Physics	(4)
		Physics 748	Experimental Nuclear Physics Seminar	(1)
		Physics 899	Doctoral Thesis Research	(5)
1991	Spring	Physics 395	Advanced Experiments	(3)
		Physics 899	Doctoral Thesis Research	(4)

Courses Taught at the University of Maryland (continued)

1991	Fall	Physics 741	Nuclear Physics: Survey	(3)
		Physics 899	Doctoral Thesis Research	(8)
1992	Spring	Physics 395	Advanced Experiments	(3)
		Physics 899	Doctoral Thesis Research	(8)
1992	Fall	Physics 395	Advanced Experiments	(3)
		Physics 899	Doctoral Thesis Research	(3)
1993	Spring	Physics 395	Advanced Experiments	(3)
		Physics 899	Doctoral Thesis Research	(2)
1993	Fall	Physics 420	Principles of Modern Physics	(3)
		Physics 899	Doctoral Thesis Research	(2)
		Physics 389	Undergraduate Thesis Research	(3)
1994	Spring	Physics 395	Advanced Experiments	(3)
		Physics 899	Doctoral Thesis Research	(2)
		Physics 389	Undergraduate Thesis Research	(3)
1994	Fall	Physics 420	Principles of Modern Physics	(3)
		Physics 899	Doctoral Thesis Research	(2)
		Physics 389	Undergraduate Thesis Research	(3)
1995	Spring	Physics 395	Advanced Experiments	(3)
		Physics 899	Doctoral Thesis Research	(2)
		Physics 389	Undergraduate Thesis Research	(3)
1995	Fall	Physics 263	General Physics	(4)
		Physics 798	Special Problems in Advanced Physics	(6)
		Physics 899	Doctoral Thesis Research	(2)
1996	Spring	Physics 395	Advanced Experiments	(3)
		Physics 899	Doctoral Thesis Reserch	(2)
	Summer	Physics 899	Doctoral Thesis Research	(2)
1996	Fall	Physics 263	General Physics	(4)
		Physics 899	Doctoral Thesis Research	(2)
1997	Spring	Physics 395	Advanced Experiments	(3)
		Physics 899	Doctoral Thesis Research	(2)
	Summer	Physics 899	Doctoral Thesis Research	(3)
1997	Fall	Physics 263	General Physics	(4)
		Physics 299	Special Problems in Physics	(3)
1998	Spring	Physics 262	General Physics	(4)
1998	Fall	Physics 375	Experimental Physics III	(3)
1999	Spring	Physics 262	General Physics	(4)
		Physics 499A	Individual Problems	(3)

Courses Taught at the University of Maryland (continued)

1999	Fall	Physics 375	Experimental Physics III	(3)
2000	Spring	Physics 402	Quantum Physics II	(4)
		Physics 499A	Individual Problems	(3)
2000	Fall	Physics 375	Experimental Physics III	(3)
2001	Spring	Physics 402	Quantum Physics II	(4)
2001	Fall	Physics 375	Experimental Physics III	(3)
2002	Spring	Physics 402	Quantum Physics II	(4)
2002	Fall	Physics 161	General Physics: Mechanics	(3)
2003	Spring	Physics 375	Experimental Physics III	(3)

Chia-cheh Chang

Departmental Services at the University of Maryland

1974-75	
1975-76	Undergraduate Advising Committee (Physics sophomore advisor)
1976-77	Undergraduate Advising Committee (Physics junior advisor) Major Courses Group Leader Liasion with Mathematics (Undergraduate)
1977-78	Undergraduate Advising Committee (Physics senior advisor) Honors Committee Liasion with Mathematics (Undergraduate) Group Leader of Physics Major Courses (PHYS-191/296)
1978-79	Physics Council Physics Executive Committee
1979-80	Physics Council Executive Committee of Physics Council
1980-81	Campus Senate
1981-82	
1982-83	Sabbatical Leave
1983-84	Physics Appointment, Promotion, and Tenure Committee
1984-85	Physics Appointment, Promotion, and Tenure Committee Physics Faculty Salary Advisory Committee Chairman, Teaching Excellence Committee
1985-86	Chairman, Physics Faculty Salary Advisory Committee Chairman, Teaching Excellence Committee Physics Council General Committee on Undergraduate Education in Physics: Subcommittee to Revise PHYS 263A Lab Writeups Subcommittee on the Advanced Laboratories Subcommittee on Financial Affairs of the Physics Executive Council Advanced Laboratories Sub-Group on Phys 395/429/485

Departmental Services at the Unversity of Maryland(continued)

1986-87 Chairman, Teaching Evaluation and TA Orientation Committee
Subcommittee on Visitation Faculty
Physics Council
General Committee on Undergraduate Education in Physics

1987-88 Chairman, Teaching Evaluation and TA Orientation Committee
Subcommittee on Visitation Faculty
Physics Council
General Committee on Undergraduate Education in Physics
CMPS College APT Committee

1988-89 Physics Council
Subcommittee on the Advanced Laboratories

1989-90 Appointments, Promotions, and Tenure Review Committee
Subcommittee on the Advanced Laboratories

1990-91 Appointments, Promotions, and Tenure Review Committee

1991-92 Physics Council
Council Executive Committee

1992-93 Physics Council
Subcommittee on Undergraduate Laboratories

1993-94 Departmental Faculty Salary Advisory Committee
Subcommittee on Physics Qualifying Exam
Subcommittee on Undergraduate Laboratories

1994-95 Chairman, Departmental Faculty Salary Advisory Committee
Subcommittee on Physics Qualifying Exam
Subcommittee on Undergraduate Laboratories

1995-96 Physics Council
Vice-Chair, Physics Council Executive Committee
Search Committee for TQHN Group
Subcommittee on Undergraduate Labs

Departmental Services at the Unversity of Maryland (continued)

1996-97	Physics Council Physics Council Executive Committee Subcommittee on Undergraduate Education Subcommittee on Undergraduate Labs
1997-98	Appointments, Promotions, and Tenure Review Committee General Committee on Undergraduate Education Subcommittee on Undergraduate Labs
1998-99	Physics Council Chairman, Appointments, Promotions, and Tenure Review Committee General Committee on Undergraduate Education Subcommittee on Undergraduate Labs
1999-00	Physics Council Departmental Faculty Salary Advisory Committee General Committee on Undergraduate Education Subcommittee on Undergraduate Labs TA Orientation Committee Elections and Referenda Committee
2000-01	Departmental Faculty Salary Advisory Committee General Committee on Undergraduate Education Subcommittee on Majors' Labs Elections and Referenda Committee CMPS APT Pools
2001-2002	CMPS College APT Pool Physics Majors' Labs Committee
2002-2003	Member, Appointments, Promotions, and Tenure Review Committee Member, Physics Council Member, Majors' Laboratory Committee Member, Expanded Qualifying Examination Committee