

DEPARTMENT OF PHYSICS
UNIVERSITY OF MARYLAND
College Park, Maryland

Curriculum Vitae

GEORGE GLOECKLER
Professor

I. Personal Data

Birth: August 10, 1937, Odessa, Ukraine (naturalized September 1957)

II. Education

B.S. University of Chicago	1960	Physics
M.S. University of Chicago	1961	Physics
Ph.D. University of Chicago	1965	Physics

III. Experience in Higher Education

Univ. of Maryland	1998-	Distinguished University Professor Dept. of Physics & IPST
Univ. of Maryland	1997-1998	Research Professor Dept. of Physics & IPST
Univ. of Maryland	1991-1997	Professor Dept. of Physics & IPST
Univ. of Maryland	1986-1991	Professor Dept. of Physics & Astronomy and IPST
Univ. of Maryland	1978-1986	Professor Dept. of Physics & Astronomy
Univ. of Maryland	1973-1978	Assoc. Professor Dept. of Physics & Astronomy
Univ. of Maryland	1967-1973	Asst. Professor Dept. of Physics & Astronomy
Univ. of Chicago	1965-1966	Research Associate Enrico Fermi Inst. for Nuclear Studies
Univ. of Chicago	1964-1965	Enrico Fermi Fellow Enrico Fermi Inst. for Nuclear Studies
Univ. of Chicago	1961-1964	Research Assistant Enrico Fermi Inst. for Nuclear Studies
Univ. of Chicago	1960-1961	Teaching Assistant, Physics Dept.

Relevant Experience

Principal Investigator

Solar Wind Ion Composition Spectrometer for the ULYSSES Mission, 1978-present

Solar Wind and Suprathermal Composition Studies on the WIND Spacecraft of the ISTP Mission, 1989-present

SWIMS/SWICS Spectrometer Experiment on the Advanced Composition Explorer (ACE) Spacecraft, 1991-present

Solar Wind Ion Composition Measurements: Development of Advanced Experimental Techniques and Instrument Concepts, 1969-1986.

CHEM Spectrometer Experiment on the Active Magnetospheric Particle Tracer Experiment (AMPTE) Charge Composition Explorer (CCE) Spacecraft, 1978-1991

Interstellar Pathfinder: A Mission to the Inner Edge of the Interstellar Medium (pending).

Lead Co-Investigator

MESSENGER (Mercury: Surface, Space Environment, Geochemistry, Ranging), Fast Imaging Plasma Spectrometer (FIPS). (Selected November 1999)

Investigation of the Composition and Dynamics of the Jovian Magnetosphere.

Energetic Particle and Ion Composition (EPIC) Experiment on the Japanese GEOTAIL Spacecraft of the ISTP mission.

Ions and Electrons Experiment on the Explorers IMP 7 and 8 Spacecraft.

Low Energy Charged Particle Experiment on Voyager 1 and 2 Spacecraft.

Nuclear and Ionic Charge Composition Experiments on ISEE 1 and 3 Spacecraft.

Cosmic Ray Range vs. Energy Experiments on IMPs 1, 2 and 3.

Experimental Techniques for Composition Measurements of Magnetospheric and Cometary Atomic and Molecular Ions and Neutrals.

Charge, Element and Isotope Analysis System (CELIAS) Experiment on the ESA SOHO Mission.

Ultraviolet Coronagraph Spectrometer (UVCS) for the ESA SOHO Mission.

CHEMS Sensor of the MIMI Instrument on the Cassini Mission to Saturn, 1991-present

Publications and Talks (since 1964)

Refereed Journals:	290
Conference Proceedings:	350
Technical Reports:	10
Invited Talks	96
Contributed Talks	over 500
Colloquia and Seminars	38

IV. Experience other than in Higher Education

Chicago Midway Laboratory 1959-1960 Technician

V. (a) Membership in Honorary and Professional Societies

National Academy of Sciences Elected 1997
American Geophysical Union (Elected Fellow, 1990) 1965-
American Physical Society (Elected Fellow, 1981) 1965-1985
American Astronomical Society 1970-1975
American Association for the Advancement of Science 1971-1974,
1997-
Sigma Xi 1965-

(b) Honors and Awards

- Awarded: Title of Distinguished University Professor-effective 1 July 1998
- Elected: National Academy of Sciences, April 1997
- Received the University of Chicago Alumni Association Professional Achievement Citation June. 1997
- Senior US. Scientist Award (Humboldt Award), 1977-1978
- NASA Pre-doctoral Fellowship 1962-1964
- Enrico Fermi Fellow 1964-1965
- Faculty General Research Award (University of Maryland), 1968
- Alfred P. Sloan Research Fellowship Award, 1969-1971
- Elected: Secretary, Cosmic Ray Section of the American Geophysical Union (AGU) 1980-1982
- NASA Exceptional Scientific Achievement Medal (Voyager), May 10, 1981.
- NASA Group Achievement Award (Voyager), May 10, 1981.
- Elected: Fellow of the American Physical Society, Nov. 1982.
- Faculty honoree: Honors Convocation, Univ. of Maryland, April 1982
- NASA Special Achievement Award - AMPTE Mission, March 1986
- NASA Group Achievement Award-Uranus Encounter (Voyager), September 19, 1986.
- Elected: Fellow of the American Geophysical Union, 1990
- NASA Group Achievement Award, Ampte Mission Operations, June 14, 1990.
- NASA Group Achievement Award, Voyager Science Investigation -- Low Energy Charged Particles Investigation, Sept. 21, 1990.
- ESA (European Space Agency) Certificate of Valuable Contribution -- Ulysses Project, 1991
- NASA Public Service Group Achievement Award, Ulysses Mission, Nov. 1992.
- NASA Group Achievement Award - for work on the Ulysses Jupiter fly-by, Feb. 1993.
- Intived by the UNESCO-EOLSS Joint Committee to serve as of Honorary Theme Editor (HTE) for the Theme 6.9. Astronomy and Astrophysics, January 1999.

VI. (a) Theses Directed (Ph.D.)

James W. Sari	"The Modulation of Low Energy Cosmic Rays"	Aug. '72
Thomas B. Kaiser	"The Behavior of Charged Particle Distributions in Time-Independent Stochastic Magnetic Fields"	Dec. '73
Raul Mainardi	"A Measurement of the Cosmic Ray Ratio at Energies 1.5 GeV Using a Large Area Proportional Scintillation Counter Stack"	May '75
Richard Sciambi	"Charge States of Low Energy Ions From the Sun"	Dec. '75
Antoinette B. Galvin	"Charge States of Heavy Ions in the Energy Range ~30-130 keV/Q Observed in Upstream Events Associated with the Earth's Bow Shock"	May '82
Dale C. Brown	"Observations of Sun-ward and Tailward Ion Streaming in the Magnetotail of Jupiter with Voyager 2"	Dec. '85
Emily A. Greene	"The Flow Configuration of Protons and Alpha Particles in the Earth's Subsolar Magnetosheath"	Dec. '90
Kancham Chotoo	"Measurements of H ⁺ , He ²⁺ , and He ⁺ in Corotating Interaction Regions at 1 AU"	Dec. 98

(b) Theses Directed (M. S.)

Alfred Buonaguro	Non-thesis	Aug. '69
John B. Spiker	"Description and Calibration of a Deflection Energy Analyzer for Satellite Observation of Interplanetary Particles in the	Aug. '70

Range of 0.1 to 30 MeV/Charge"

Thomas B. Kaiser	Non-thesis	Jan. '71
John P. Coughlin	Non-thesis	Aug. '72
Richard Sciambi	Non-thesis	May '73
Antoinette B. Galvin	Non-thesis	Dec. '76
Anthony Segrego	Non-thesis	Dec. '78
Dale C. Brown	Non-thesis	Dec. '81
Jeff Miller	Non-thesis	May. '98

(c) Current Research Student

VII. University Services Other than Teaching

(a) Departmental

- 1969-70 Facilities Committee (Chairman, Electrical Shop Member, Technical Staff)
Graduate Lab 209
Qualifying Exam Grader
- 1970-71 Electronics Shop Subcommittee (Chairman)
Member of four Qualifying Oral Committees
Facilities Committee and Technical Staff Subcommittee
- 1971-72 Electronics Shop Subcommittee (Chairman)
Technical Staff Committee
Ph.D. Oral Committee (Member of 2 orals)
Qualifying Exam Problem Author
Facilities Committee
Computing Committee (Member and chairman since March 1972)
Qualifying Oral Committee (Member of 4 orals)
Special Committee to Study Phys. 423 (Member)
- 1972-73 Electrical Shops Facilities Committee (Chairman)
Technical Staff Committee
Ph.D. Oral Committee (Member of 5 orals)(Chairman of 1)
- 1973-74 Sabbatical Leave
- 1974-75 Undergraduate Laboratory Courses (Course Chairman)
Physics Councilor
Departmental Priorities Committee
- 1975-76 Physics Counselor

- General Committee on Research Affairs (Chairman)
 Undergraduate Laboratory Courses (Group Leader)
 Adjunct Policy Committee on Teaching Facilities and Services
 (Member)
- 1976-77 Appointments, Promotions, and Tenure Review Committee
 General Committee on Faculty and Staff Affairs
 Space Utilization Committee: Space Sciences Building
- 1977-78 Appointments, Promotion and Tenure Review Committee
 General Committee on Faculty and Staff Affairs
 Space Utilization Committee: Space Sciences Building
- 1978-79 Course Group Leader, Graduate Lab
 General Committee on Research Affairs
 Departmental Faculty Salary Advisory Committee
- 1979-80 General Committee on Research Affairs
- 1980-81 Graduate Advisor
 General Committee on Research Affairs
- 1981-82 Graduate Advisor
 Qualifying Examination
- 1982-83 Registrations
 Qualifying Exam Problem Author
 Ph.D. Oral Committee (Chairman)
 Qualifying Exam Oral Committee
- 1983-84 Qualifying Exam Problem Author
 Ph.D. Oral Committee (Member)
 Qualifying Exam Oral Committee
- 1984-85 Member, Division Review Committee on Female Faculty Salaries
 Qualifying Exam Problem Grader
 Qualifying Exam Oral Committee
 School Liaison and Physics Olympics
- 1985-86 Qualifying Exam Oral Committee
- 1986-87 Qualifying Exam Oral Committee
 Prepared problem for Qualifying Exam
- 1987-88 Qualifying Exam Oral Committee
 Prepared problem for Qualifying Exam

- 1988-89 Sabbatical Leave
- 1990-91 Qualifying Exam Oral Committee
Qualifying Exam Problem Grader
- 1991-92 Qualifying Exam Oral Committee

(b) University

- 1972-73 User's Committee, Computer Center
- 1974-75 Division Research Review Committee
- 1975-76 Programs, Curricula, and Courses Committee of MPSE Division
- 1976-77 Space Shuttle Student Project Committee
- 1985 Member, Search Committee for Chairman, Department of Physics
and Astronomy
- 1987 Member, Meteorology, Department Review and Chairman Search
Committee
- 1988-89 Sabbatical Leave
- 1987-93 University of Maryland representative,
Universities Space Research Association (USRA)

(c) Community and Professional Services

- Lectures on Cosmic Rays to participants of the Summer Institute of Physics
- Lectures on the Energy Spectrum of Cosmic Rays in the Galaxy (Seminar on
Interstellar Molecules)
- Lectures on Space Instrumentation (Seminar on instrumentation, Dr. Zipoy)
- Member of Grand Tour Definitions Team
- Chairman: "Low Energy Galactic and Cosmic Rays" Session APS Meeting,
Washington, DC
- Chairman: "Solar Particle Composition" Session AGU Meeting, Washington,
DC
- Member of Science Working Group: Interplanetary Monitoring Platforms (IMP 7
& 8), 1968-present
- Member of Science Working Group: International Sun-Earth Explorers (ISEE 1 &
C), 1972-present
- Member of Investigator Group: Voyager I and II Low Energy Charged Particles
Investigation, 1972-present

Member of NASA Ad Hoc Subcommittee for Experiment Selection for High Energy Astrophysics Spacecraft Payloads, 1973-present

Chairman: 14th International Cosmic Ray Conference, August 15-29, 1975; Munich, W. Germany (Invited paper session: 22 August 1975)

Chairman: Study Panel on Strategy for Future Interplanetary Physics Studies, (report submitted to the Committee on Space Astronomy and Astrophysics of the Space Science Board of the National Academy of Sciences)

Member: Interplanetary Physics Working Group, May 1976-1978

Member: Origins of Plasmas in the Earth's Neighborhood Working Group, December 1977-1979

Member: Science Working Team -- Solar Polar (Out-of-Ecliptic Mission) Ulysses, 1978-present

Chairman: 16th International Cosmic Ray Conference, Kyoto, Japan, August 6-18, 1975

Member: Science Working Group - AMPTE Mission, 1979-present

Elected Office: Secretary of the Cosmic Ray Section of the American Geophysical Union (AGU), July 1980 to June 1982

Member: Management Operations Working Group (MOWG) for Solar and Heliosphere Physics, 1982-1985

Member: Committee on Solar System Exploration (nominated)

Member: Science Working Group - Origins of Plasmas in the Earth's Neighborhood (OPEN) Mission, 1981-present

Member: Study Panel - Interplanetary Panel: Solar Terrestrial Research for the 1980's Committee on Solar-Terrestrial Research, Geophysics Research Board, Assembly of Mathematical and Physical Sciences, National Research Council, 1981.

Member: Study Panel - Star Probe Study Group: Particles and Fields Panel, 1980-1982

Chairman: Solar Energetic Particle Observations: Composition, General, ^3He -rich Events, 17th International Cosmic Ray Conference, Paris, July 13-25, 1981

Member: Nominating Committee: Solar Terrestrial Relationships Section of the American Geophysical Union (AGU), 1982-83.

Member: Solar Terrestrial Physics Workshop: Working Group on Particle Acceleration, June 1983

Member: Space Science Working Group, 1982-present

Member: Committee on Solar and Space Physics, National Academy of Sciences, 1985-1988

Convenor: Topical Meeting D.2, The Terrestrial Ring Current, XXVII Plenary Meeting of COSPAR (Committee on Space Research), July 1988

Invited: Chairman of the Ad Hoc Study Group for the Solar Probe Mission (declined invitation due to other commitments)

Member: Ad Hoc Study Group for the Solar Probe Mission, Sept. 1988-

Member: Small Explorer Selection Committee Panel

Subgroup Chairman: NASA Research Proposals Review Committee

Co-Convenor: Session 4.10, Dynamics and Abundances of Minor Ions, IAGA 6th Scientific Meeting, July 1989

Member: Planetary Instrument Definition and Development Program Panel,
June 1989

Subpanel Chairman: Sounding Rocket Program Review, Sept. 1989

Organizer: AGU session on "Minor Ions in the Solar Wind", Dec. 1989

Member: AGU (American Geophysical Union) the Space Physics and Aeronomy
(SPA) Awards Committee. (1992-)

Member: IACG (Inter-Agency Consultative Group) Working Group 1. (Science) The
IACG is an informal coordinating body representing the four major space
agencies: NASA (USA), ESA (Europe), IKI (Russia), and ISAS (Japan). IACG is
now focusing on the coordination of the many spacecraft in the solar terrestrial
and heliospheric science area. Appointed by NASA Nov. 1, 1993 -

Member: USRA (Universities Space Research Association) Astronomy and Space
Physics Science Council. Appointed Dec. 1993-present

Member: Proposal Review Panel (Research and Technology) - Heliospheric Physics.
Nov. 18-20, 1993.

Member: Fast Pluto Flyby Particles and Fields Study Group. July 12 - 15, 1993.

Member: NASA Review Panel, Heliospheric Missions Guest Investigator Research
and Analysis Program, June, 1997

Chair: Solar Probe Science Definition Team, Nov. 1997- 2000

Member: SPA Fellows Committee of the AGU, Nov. 1998-2001

Member: NASA -- Sun-Earth Connection 2000 Roadmap Team, Jan. - Aug. 1999

Member: NRC -- Fusion Science Assessment Committee (FuSAC), Feb. 1999-Aug
2000.

Member: NRC -- Space Studies Board's Task Group on the Review of Scientific
Aspects of the NASA Triana Mission, Nov. 5, 1999 - Mar. 5, 2000.

Member: NASA -- Sun-Earth Connection Advisory Subcommittee (SECAS), Jan.
2000 - present

(d) Referee

Nature, Physical Review Letters, Geophysical Research Letters,
Journal of Geophysical Research, Astrophysical Journal, Review of
Scientific Instruments, Astronomy and Astrophysics, Space Science
Reviews, University of Arizona Press Space Science Series, NASA and
NSF proposals.

VIII. Courses Taught at the University of Maryland

Fall 1967	Physics 60	Intermediate Physics Lab (2)
Spring 1968	Physics 60 110	Intermediate Physics Lab (2) Special Lab Projects in Physics (3)
Fall 1968	Physics 60 399	Intermediate Physics Lab (2) Master's Dissertation Research (3)
Spring 1969	Physics 60 110 399	Intermediate Physics Lab (2) Special Lab Projects in Physics (3) Master's Dissertation Research (3)
Fall 1969	Physics 60 399 250	Intermediate Physics Lab (2) Master's Dissertation Research (3) Spec. Projects in Advanced Physics (1)
Spring 1970	Physics 110 153 399 250	Special Lab Projects in Physics (3) Modern Physics for Engineers (3) Master's Dissertation Research (3) Special Projects in Advanced Physics (1)
Fall 1970	Physics 153 499	Modern Physics for Engineers (3) Doctoral Dissertation Research (6)
Spring 1971	Physics 153 499	Modern Physics for Engineers (3) Doctoral Dissertation Research (5)
Fall 1971	Physics 420 899	Modern Physics for Engineers (3) Doctoral Thesis Research (6)
Spring 1972	Physics 771 899	Cosmic Ray Physics (3) Doctoral Thesis Research (8)
Fall 1972	Physics 365 899 778	Advanced Experiments (2) Doctoral Thesis Research (8) Space and Cosmic Ray Physics Seminar (1)
Spring 1973	Physics 365 778 899	Advanced Experiments (2) Space and Cosmic Ray Physics Seminar (1) Doctoral Thesis Research (5)
1973-74		Sabbatical Leave

Fall 1974	Physics 778	Space and Cosmic Ray Physics Seminar (1)
Spring 1975	Physics 778	Space and Cosmic Ray Physics Seminar (1)
Fall 1975	Physics 398 778 899	Independent Studies Seminar (3) Space and Cosmic Ray Physics Seminar (1) Doctoral Dissertation Research (3)
Spring 1976	Physics 778 429 621 899	Space and Cosmic Ray Physics Seminar (1) Atomic and Nuclear Physics Lab (3) Graduate Laboratory (3) Doctoral Dissertation Research (3)
Fall 1976	Physics 429 621 778	Atomic and Nuclear Physics Lab (3) Graduate Laboratory (3) Space and Cosmic Ray Physics Seminar (1)
Spring 1977	Physics 778	Space and Cosmic Ray Physics Seminar (1) Leave of Absence - Spring Semester
Fall 1977	Physics 778 429 621	Space and Cosmic Ray Physics Seminar (1) Atomic and Nuclear Physics Lab (3) Graduate Laboratory (3)
Fall 1977 (continued)	798 899	Special Problems in Advanced Physics (2) Doctoral Dissertation Research (6)
Spring 1978	Physics 121 778 798A	Fundamentals of Physics I (4) Space and Cosmic Ray Physics Seminar (1) Topics in Space Physics (1 lecture) (3)
Fall 1978	Physics 398A 429 621 778 899	Independent Studies Seminar (1) Atomic and Nuclear Physics Lab (3) Graduate Laboratory (3) Space and Cosmic Ray Physics Seminar (1) Doctoral Dissertation Research (6)
Spring 1979	Physics 395 778 899	Advanced Experiments (3) Space and Cosmic Ray Physics Seminar (1) Doctoral Dissertation Research (6)
Summer 1979	Physics 899	Doctoral Dissertation Research (6)
Fall 1979	Physics 395 778 899	Advanced Experiments (3) Space and Cosmic Ray Physics Seminar (1) Doctoral Dissertation Research (6)

Spring 1980	Physics 262 778 899	General Physics - Heat, Electricity and Magnetism (4) Space and Cosmic Ray Physics Seminar (1) Doctoral Dissertation Research (6)
Fall 1980	Physics 262 778 798 899	General Physics - Heat, Electricity and Magnetism (4) [with MacDonald] Space & Cosmic Ray Physics Seminar (1) [with Mason] Special Problems in Advanced Physics (3) Doctoral Dissertation Research (8)
Spring 1981	Physics 778 889	Sabbatical Leave Space and Cosmic Ray Physics Seminar (1) Doctoral Dissertation Research (7)
Fall 1981	Physics 778 899	Sabbatical Leave Space and Cosmic Ray Physics Seminar (1) Doctoral Dissertation Research (8)
Spring 1982	Physics 771 778 899	Space Physics: A Survey of Extra-Terrestrial Phenomena (3) Space & Cosmic Ray Physics Seminar (1) [with Mason] Doctoral Dissertation Research (5)
Fall 1982	Physics 122 778 899	Fundamentals of Physics II (4) Space and Cosmic Ray Physics Seminar (1) Doctoral Dissertation Research (8)
Spring 1983	Physics 121 778 899	Fundamentals of Physics I (4) Space and Cosmic Ray Physics Seminar (1) Doctoral Dissertation Research (8)
Fall 1983	Physics 778 899	Space and Cosmic Ray Physics Seminar (1) Doctoral Dissertation Research (8)
Spring 1984	Physics 121 771 778 798 899	Fundamentals of Physics I (1) Cosmic Ray Physics: Survey (3) Space and Cosmic Ray Physics Seminar (1) Special Problems in Advanced Physics (3) Doctoral Dissertation Research (8)
Fall 1984	Physics 295 778	Lab in Electricity & Magnetism (2) Space and Cosmic Ray Physics Seminar (1)

	899	Doctoral Dissertation Research (8)
Spring 1985	Physics 295 899 778	Lab in Electricity & Magnetism (2) Doctoral Dissertation Research (8) Space and Cosmic Ray Physics Seminar (1)
Fall 1985	Physics 295 899 778	Lab in Electricity & Magnetism (2) Doctoral Dissertation Research (8) Space and Cosmic Ray Physics Seminar (1)
Spring 1986		IPST joint appointment - no formal teaching duties
Fall 1986	Physics 621 429 778 899	Graduate Laboratory (3) Atomic & Nuclear Physics Laboratory (3) Space and Cosmic Ray Physics Seminar (1) Doctoral Dissertation Research (8)
Spring 1987	Physics 621 429 398A 899	Graduate Laboratory (3) Atomic & Nuclear Physics Laboratory (3) Contemporary Space Science Topics (1) (with Hamilton & Ipavich) Doctoral Dissertation Research (8)
Fall 1987	Physics 621 429 778 899	Graduate Laboratory (3) Atomic & Nuclear Physics Laboratory (3) Space and Cosmic Ray Physics Seminar (1) Doctoral Dissertation Research (8)
Spring 1988	Physics 621 429 899	Graduate Laboratory (3) Atomic & Nuclear Physics Laboratory (3) Doctoral Dissertation Research (8)
Fall 1988	Physics 899	Sabbatical Leave Doctoral Dissertation Research (8)
Spring 1989	Physics 899	Sabbatical Leave Doctoral Dissertation Research (8)
Fall 1989	Physics 621 429 899	Graduate Laboratory (3) Atomic & Nuclear Physics Laboratory (3) Doctoral Dissertation Research (8)
Spring 1990	Physics 899	Doctoral Dissertation Research (8)

Fall 1990	Physics 621 429 899	Graduate Laboratory (3) Atomic & Nuclear Physics Laboratory (3) Doctoral Dissertation Research (8)
Spring 1991		No formal teaching
Fall 1991		No formal teaching
Spring 1992	Physics 263	General Physics: Electrodynamics, Light Relativity and Modern Physics (4) 125 students
Fall 1992	Physics 263 778	General Physics: Electrodynamics, Light Relativity and Modern Physics (4) 161 students Space and Cosmic Ray Physics Seminar (1) 3 students
Spring 1993		No formal teaching
Fall 1993		No formal teaching
Spring 1994		No formal teaching
Fall 1994	Physics 263 778	General Physics: Electrodynamics, Light Relativity and Modern Physics (4) 102 students Space and Cosmic Ray Physics Seminar (1) 3 students
Spring 1995	Physics 778	Space and Cosmic Ray Physics Seminar (1) No formal teaching --IPST
Fall 1995		Sabbatical leave
Spring 1996		Sabbatical leave
Fall 1996	Physics 275	Experimental Physics I: Mechanics and Thermodynamics (1) 23 students

- IX. Contract, grants, and proposals: Description, dates, amounts and other investigators.
- A. Proposals for Satellite and Space Probe Experiments and Investigations (since 1972) Symbols used: # Proposal accepted, * G. Gloeckler, Principal Investigator for experiment and Program Director at the University of Maryland, + G. Gloeckler, Program Director at the University of Maryland
- #+1. "Investigation of the Nuclear and Ionic Charge Distribution ($2 < Z < 30$) as a Function of Energy in the Range 5 keV/charge to 20 MeV/nucleon on the Heliocentric and Mother Spacecraft", D. Hovestadt, C. Y. Fan, G. Gloeckler, J.J. O'Gallagher, L. A. Fisk and M. Scholer, proposal accepted by NASA-ESRO, September 1972.
- #+2. "Low Energy Charged Particle Measurements in the Jovian, Saturnian and Interplanetary Environments on the MJS-77 Spacecraft", T.P. Armstrong, W. I. Axford, C.O. Bostrom, C.Y. Fan, G. Gloeckler, S.M. Krimigis and L.J. Lanzerotti, proposal accepted by NASA, August 1972.
- #3. "A Large Area (100 cm²-sr) Instrument for the Study of the Spectra and Composition of Galactic and Solar Cosmic Rays", V.K. Balasubrahmanyam, B. J. Teegarden, G. Gloeckler, W.R. Binns, M.H. Israel and J. Klarmann, proposal submitted to NASA, September 1972.
- *4. "An Experiment to Determine and Study the Chemical Composition Charge States of Solar Particles with Energies from 0.3 to 1,000 keV per Charge", G. Gloeckler, J.J. O'Gallagher, D. Hovestadt and L. A. Fisk, proposal submitted to NASA, November 1974.
- +5. "Charged Particle Measurements System for the Uranian, Jovian, and Interplanetary Environments on the MJU-79 Spacecraft", T.P. Armstrong, W.I. Axford, C.O. Bostrom, C.Y. Fan, G. Gloeckler, S.M. Krimigis, L.J. Lanzerotti and D.J. Williams, proposal submitted to NASA, August 1975. (Program canceled by NASA.)
- +6. "Study of Energetic Jovian Electron-Proton-Ion Composition (EPIC)" for Jupiter Orbiter 1981/82 Mission, F.B. McDonald, J.H. Trainor, A.W. Schardt, G. Gloeckler, W.I. Axford, E. Keppler, A. Korth, A.K. Richter and V.M. Vasyliunas, submitted to NASA, 1976.
- #*7. "Charge, Energy and Mass Spectrometer (CHEM) Experiment on the Active Magnetospheric Particle Tracer Experiment (AMPTE) Mission", G. Gloeckler, B. Wilken, W.I. Axford, D. Hovestadt and G. Paschmann, submitted to and accepted by NASA, 1977.

- #*8. "Solar Wind Ion Studies on the Out-of-Ecliptic Mission", G. Gloeckler, F.M. Ipavich, L.A. Fisk, K.W. Ogilvie, J. Geiss, M. Balsiger, F. Gliem, J.F. McKenzie, B. Wilken and W. Studemann, submitted to and accepted by NASA and ESA, August 1977.
- #9. "NASA/ESA Out-of-Ecliptic Mission Energetic Particles Investigation with a Comprehensive Particle Analysis System 'COMPAS'", R.A. Mewaldt, E.C. Stone, R.E. Vogt, J.H. Trainor, M.A.I. Van Hollebeke, T.T. von Roseninge, G. Gloeckler, G.M. Mason, D. Hovestadt, B. Klecker, L.A. Fisk and W.R. Webber, submitted to and accepted by NASA, August 1977. (Program canceled by NASA, 1981.)
- #*10. "An SMM-ISEE Collaborative Study of Solar Phenomena", L.A. Fisk, G. Gloeckler and D. Hovestadt, submitted to and accepted by NASA, November 1977.
- +11. "Spacelab Ion Mass-Energy-Charge Measurements in the Vicinity of the Low Altitude Plasmopause", R. Arnoldy, G. Gloeckler, T. Rosenberg, B. Wilken, G. Kremser and G. Parks, submitted to NASA, November 1978.
- #*12. "Solar Wind and Suprathermal Ion Composition Studies on the OPEN Mission (IPL Spacecraft)", G. Gloeckler, F.M. Ipavich, L.A. Fisk, T. Holzer, K.W. Ogilvie, H. Balsiger, J. Geiss, F. Gliem, W. Studemann and B. Wilken, submitted to NASA, March 15, 1980, accepted December 1981.
13. "Low Energy Ion Studies on the OPEN Interplanetary Physics Laboratory", G.M. Mason, G. Gloeckler, D.C. Hamilton, D. Hovestadt, B. Klecker, M. Scholer, R.E. Gold and L.A. Fisk, submitted to NASA, March 15, 1980, not accepted.
- #*14. "Thermal and Suprathermal Ion Composition Studies Close to the Sun: Development of Instrumentation for the Solar Probe Mission", G. Gloeckler, G.M. Mason and F.M. Ipavich, submitted to and accepted by NASA, June 1980.
- #*15. "Augmentation to NASA Grant NAGW-101, Supplement to Proposal for Thermal and Suprathermal Ion Composition Studies Close to the Sun: Development of Instrumentation for the Solar Probe Mission", G. Gloeckler, G.M. Mason and F.M. Ipavich, submitted to and accepted by NASA, December 1980.
- #+16. "Investigation of the Composition and Dynamics of the Jovian Magnetosphere", S.M. Krimigis, T.P. Armstrong, G. Gloeckler, L.J. Lanzerotti and E.C. Roelof, submitted to and accepted by NASA via Johns Hopkins University, Applied Physics Laboratory, June 1980.
- #*17. "A Program of Research on Experimental Techniques for the Studies of

- Dynamical Processes in the Solar Corona and the Origin of the Solar Wind", G. Gloeckler, G.M. Mason, F.M. Ipavich and D. Hamilton, submitted to and accepted by NASA, December 1982.
- #18. "Advanced Composition Explorer", E.C. Stone, L.F. Burlaga, W.C. Feldman, G. Gloeckler, R.E. Gold, J.V. Hollweg, S.M. Krimigis, G.M. Mason, R.A. Mewaldt and J.A. Simpson, submitted to NASA, July 1983. Accepted 1989.
- #19. "The Acceleration and Transport of Particles Energized in Solar Flares and in the Interplanetary Medium", G. Mason, G. Gloeckler and D. Hamilton, submitted to NSF, January 1984.
- #20. "A 'Get-Away-Special' Experiment to Measure the Charge State of the Cosmic Ray Anomalous Component", G.M. Mason, D.C. Hamilton, G. Gloeckler, D. Hovestadt, B. Klecker, B. Blake, D. Chenette, NASA, July 1984.
21. "Space Science and Technology Program", D. Papadopoulos, D. Boyd, M. Coplan, D. Currie, R. Ellis, G. Gloeckler, G.M. Mason and D. Zipoy, submitted to DOD Space Defense Institute Office, February 1985.
- #+22. "Reduction and Scientific Analysis of the Data from The Charge-Energy-Mass (CHEM) Spectrometer on the AMPTE/CCE Spacecraft", G. Gloeckler, D.C. Hamilton and F.M. Ipavich, submitted to and accepted by NASA, September 1985.
23. "Cometary and Solar Wind Atomic and Molecular Ion Measurements (0.2-200 keV/charge) on the Comet Rendezvous Asteroid Flyby Mission", F.M. Ipavich, G. Gloeckler and F. Gliem, submitted to NASA by University of Iowa, November 1985, not accepted.
- #24. "A Proposal for the Study of an Advanced Composition Explorer (ACE)", E.C. Stone, L.F. Burlaga, W.C. Feldman, J. Geiss, G. Gloeckler, R.E. Gold, D. Hovestadt, S.M. Krimigis, G.M. Mason, R.A. Mewaldt, J.A. Simpson, T.T. von Rosenvinge and M.E. Wiedenbeck, submitted to NASA, July 23, 1986, accepted January 1988.
- #+25. "Development of the Suprathermal Ion Composition Spectrometer (STICS) Instrument for the EPIC Experiment on the ISTP GEOTAIL Spacecraft", G. Gloeckler, F.M. Ipavich, et al., proposal submitted and accepted by NASA via APL, May 1987.
- #+26. "Charge, Element and Isotope Analysis System for the SOHO Spacecraft", F. M. Ipavich, G. Gloeckler, et al., submitted to NASA/ESA, June 1987, Accepted, October 1988.
- #27. "The Acceleration and Transport of Particles Energized in Solar Flares and in the Interplanetary Medium", G. Mason, D. Hamilton, G. Gloeckler, L.C. Tan,

submitted to NSF, August 1987. Accepted.

- *#28. "Solar Wind and Suprathermal Ion Composition Investigation for the International Solar-Terrestrial Physics Project WIND Mission", G. Gloeckler, F. M. Ipavich, et al., submitted to NASA, January 1988. Accepted February 1988.
- #29. "A Program of Research on Experimental Techniques for Composition Measurements of Magnetospheric Atomic and Molecular Ions", D.C. Hamilton and G. Gloeckler, submitted to and accepted by NASA, March 1989.
- 30. "Magnetic Imaging Instrument (MIMI)" for the Cassini Saturn Orbiter Mission, S.M. Krimigis, A.F. Cheng, E.P. Keath, B.H. Mauk, R.W. McEntire, D.G. Mitchell, E.C. Roelof, D.J. Williams, G. Gloeckler, D.C. Hamilton, W.H. Ip, E. Kirsch, S. Livi, B. Wilken, L.J. Lanzerotti, K.C. Hsieh and T.P. Armstrong, submitted to NASA, February 1990. Accepted and confirmed.
- 31. "Cassini Electron and Ion Composition Analysis (CELICA) for the Saturn Orbiter", E.G. Shelley, E. Möbius, S.A. Fuselier, A.G. Ghielmetti, L.M. Kistler, M.A. Lee, R.P. Lin, C. Carlson, J. McFadden, D.C. Hamilton, G. Gloeckler, A.J. Lazarus, R.L. McNutt, J.D. Richardson, J.T. Steinberg, B. Klecker, G. Haerendel, D. Hovestadt, G. Morfill, H. Rosenbauer, W.-H. Ip, S. Livi, V.M. Vasyliunas, J. Dandouras, J.M. Bosqued, H. Rème, J.-A. Sauvaud, H. Balsiger, P. Bochsler and A. Bürgi, submitted to NASA, February 1990.
- 32. MESSENGER (Mercury: Surface, Space Environment, Geochemistry, Ranging), Fast Imaging Plasma Spectrometer (FIPS). (Selected for Phase A Study).
TOTAL Mission Cost: \$333,777,000
Launch: April - August 2004
- 33. Interstellar Pathfinder: A Mission to the Inner Edge of the Interstellar Medium (pending).
TOTAL Mission Cost: \$156,600,000
Launch: July - August 2003

B. Proposals for Basic Research and Data Analysis Support (submitted annually)

1. "A Program of Research on the Measurement of the Charge and Isotopic Composition of the Primary Cosmic Rays and Transthermal Particles", G.M. Mason and G. Gloeckler, since 1969 (G. Gloeckler, Principal Investigator, 1969-1982).
- *2. "Research Program in Charged Particle and High Energy Photon Detector Technology", G. Gloeckler and F.M. Ipavich, submitted to and accepted by NASA, 1968-1987.
- *3. "Thermal and Suprathermal Ion Composition Close to the Sun", G. Gloeckler, G.M. Mason and F.M. Ipavich, proposal submitted to and accepted by NASA, 1980-1983.
- *4. "IMP-8 Spacecraft Ion and Electron Experiment Data Reduction and Analysis", G. Gloeckler, since 1973.
- *5. "The Nuclear and Ionic Charge Distribution Experiment on ISEE-1 and ISEE-3", G. Gloeckler and F.M. Ipavich, since 1974.
- *6. "Low Energy Charged Particle Measurements Experiment on Voyager", G. Gloeckler, since 1973.
- *7. "Investigation of the Composition and Dynamics of the Jovian Magnetosphere", G. Gloeckler and D.C. Hamilton, 1981-1986.
8. "The Acceleration and Transport of Particles Energized in Solar Flares and in the Interplanetary Medium, G. Mason, D. Hamilton, G. Gloeckler and L.C. Tan, 1984-1993.
- *9. "Reduction and Scientific Analysis of Data from the Charge-Energy-Mass (CHEM) Spectrometer on the AMPTE/CCE Spacecraft", G. Gloeckler, D.C. Hamilton and F.M. Ipavich, 1985-1994.
10. "Space Science and Technology Program", D. Papadopoulos, D. Boyd, M. Coplan, D. Currie, R. Ellis, G. Gloeckler, G.M. Mason and D. Zipoy, since 1985.
11. "A Program of Research on Experimental Techniques for Composition Measurements of Magnetospheric and Cometary Atomic and Molecular Ions and Neutrals", D.C. Hamilton, G. Gloeckler and F.M. Ipavich, since 1986.

C. Grants, Contracts and Awards

Grants and Contracts and cumulative funding through FY 1993 or end of grant or contract. Symbols: * Renewed every year, ** Renewed every three years, + An extended mission to the planets Uranus and Neptune has been approved. Funding for data analysis would continue.

	<u>Brief Title</u>	<u>Proposal Reference</u>	<u>Date</u>	<u>Amount</u>
1.	NASA Pre-doctoral Fellowship Award		1962-65	\$5,000
2.	Enrico Fermi Fellow		1966-67	11,000
3.	Faculty General Research Award		1968	3,000
4.	Alfred P. Sloan Research Fellowship		1969-73	17,480
*5.	IMP H/J Experiment to Analyze Ions and Electrons in the Energy Range 100 keV to 15 MeV/nucleon (NAG5-705)	B.4	1968-	3,153,522
6.	Measurement of the Charge and Isotopic Composition of the Primary Cosmic Rays & Transthermal Particles (NGR21-002-224)	B.1	1969-86	1,231,394
7.	Research Program in Charge Particle and High Energy Photon Detector Technology (NGR01-002-316)	B.2	1971-89	8,363,026
+*8.	Low Energy Charged Particle Measurements in the Jovian, Saturnian and Interplanetary Environments (JHU 601620)	A.2 B.6	1971-	1,363,751
*9.	Low Energy Cosmic Ray Experiment on International Sun Earth Explorer (ISEE) Helio-centric and Mother Satellite (NAG5-728)	A.1 B.5	1974-93	2,816,751
10.	Max-Planck-Institut/University of Maryland Purchase Agreement		1973-79	125,960

11.	Symposium on the Study of the Sun and Interplanetary Medium in Three Dimensions		1975	\$4,000
*12.	Active Magnetospheric Particle Tracer Experiment CHEM Spectrometer (NAG5-716)	A.7	1978-	3,749,740
13.	Ulysses Solar Wind Ion Composition Spectrometer (JPL 955460)	A.8	1978-	4,505,080
14.	Supra-Thermal Energetic Particle System (STEP) for International Solar Probe Mission (Program canceled by NASA in 1981)	A.9	1978-88	883,287
15.	Solar Maximum Mission	A.10	1981	32,201
16.	Max-Planck-Institut/UMD Purchase Agreement		1979-83	10,000
17.	Thermal and Suprathermal Ion Composition Studies Close to the Sun: Development of Instrumentation for the Solar Probe Mission (NAGW 101)	A.14 A.15 B.3	1980-91	1,087,120
18.	Investigations of the Composition and Dynamics of the Jovian Magnetosphere	A.16 B.7	1981-1984	97,251
19.	Definition Study for the Solar Wind and Suprathermal Ion Composition Studies on the IPL Spacecraft (NAS5-26856)	A.12	1981-90	1,144,783
20.	Acceleration and Transport of Particles Energized in Solar Flares and Interplanetary Medium (ATM-8407546 and 8720608)	A.19	1984-91	498,940
21.	Development of STICS Instrument and Data Analysis for EPIC Experiment on the ISTP GEOTAIL Spacecraft (JHU 602792)	A.25	1987-	2,658,781

22.	Solar Wind and Suprathermal Ion Composition for ISTP WIND Mission (NAS5-30370)	A.27 A.28	1989-	3,947,336
23.	Investigation Definition Phase for CELIAS for SOHO (NAS5-30385)	A.26	1988-90	195,746
24.	Charge, Element and Isotope Analysis System (CELIAS) for the SOHO Spacecraft (NAS5-31166)	A.26	1990-	1,805,423
25.	Advanced Composition Explorer Phase B Study (SWICS/SWIMS)		1991-	413,212
26.	CHEMS Sensor on the MIMI Instrument for the Cassini Mission to Saturn		1991-92	803,496
Total Accumulative Funding through 1992				<u>\$38,842,129</u>

D. Active Contracts and Grants and CY 1994 Budget

<u>Brief Title</u>	<u>1994 Budget</u>
1. IMP H/J Experiment to Analyze Ions and Electrons in the Energy Range 100 keV to 15 MeV/nucleon (NAG5-705)	60,000
2. Low Energy Charged Particle Measurements in the Jovian, Saturnian and Interplanetary Environments (Voyagers 1 and 2) (APL 600109 and 601620)	57,000
*3. Solar Wind Ion Studies on the Out-of-Ecliptic Mission (JPL 955460)	589,099
*4. Advanced Composition Explorer Phase B Study (SWICS/SWIMS)	103,264
5. Active Magnetospheric Particle Tracer (NAG5-716)	60,000
6. CHEMS Sensor on the MIMI Instrument for the Cassini Mission to Saturn	403,496
*7. Development of STICS Instrument for EPIC Experiment on ISTP GEOTAIL Spacecraft (JHU 602792)	282,344
*8. Solar Wind and Suprathermal Ion Composition for ISTP WIND mission (NAS5-30370)	267,636
9. Charge, Element and Isotope Analysis System (CELIAS) for the SOHO Spacecraft (NAS5-31166)	706,323
Total FY 1994 Funding	\$2,529,162

*Gloeckler is Principal Investigator or Project Director