

Stanley P. Davis, Ph. D

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Telephone

Citizenship

USA Background Check

Date of Birth

May 17, 2017

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United States of America (USA)

Departments of: Defense, State, Energy, Transportation and NASA

July 6, 1956

Education

- **United States National Academy of Sciences: Research Associate** Washington, DC
High-Energy Astrophysics 1995-1997
 - NASA/Goddard Space Flight Center–Laboratory for High Energy Astrophysics (NASA/GSFC–LHEA)
- **The Catholic University of America (CUA)** Washington, DC
Ph. D., Physics 1995
 - Advisor: Dr. Carl Werntz, Physics Professor, CUA
 - Dissertation Title: *Measurements of Time Dilation in Gamma-ray Bursts by Analysis of Temporal Structure*
- **New York University Tandon School of Engineering** New York City, NY
M.S., Physics 1986
 - Course Focus: Electrical Engineering, Plasma Physics, Electrodynamics, Quantum Mechanics
- **City University of New York (CUNY)/The City College** New York City, NY
B.S., Physics 1981
 - Course Focus: Physics, Mathematics

Awards, Grants & Honors

US Army International Technology Center-Atlantic (\$125k/1yr) 2011–2012
US Department of State Traditional Fulbright–Aquitaine Research Scholar (\$74k) . . . 2009–2010
US Congress Proclamation: 2 December, 2008: *Dr. Stanley P. Davis Day in New York City* 2008
US Department of Education Title 3 Grant (\$3k) Fall 2006–Summer 2007
US Department of Energy / Lawrence Livermore National Laboratory Faculty Scholar 2006
NASA/JPL–American Society for Engineering Education Summer Faculty Research (\$12k) . 2005
US Navy–American Society for Engineering Education Summer Faculty Research (\$12k) . . 1999
US National Academy of Sciences/National Research Council (\$80k) 1995–1997
NASA Graduate Student Researchers Program (Stipend+tuition) 1987–1994
National Science Foundation Travel Grant: NATO Advanced Study Institute, Sicily(\$1k) . . 1994

Significant Accomplishments

- **65th D-Day Commemoration Invited Participant** From: Presidents Obama and Sarkozy
Caen, Normandy, France 2009
 – Honor those who sacrificed their lives to liberate France and Europe during World War II

- **Supporting Global Community of Scientists** Treaty Signing
NATO Advanced Study Institute: Erice, Sicily, Italy 1994
 – Signed the Erice Statement: a statement calling for Science without secrecy or borders, written by Dirac, Kapitza, Zichichi, signed by U. S. President Ronald Reagan and over ten thousand scientists from around the world
 (http://www.ccsem.infn.it/em/erice_statement/Erice.Statement.pdf).

- **Important Measurement** Gamma-ray Burst (GRB) distance scale measured for the first time
University of Calgary: ICRC 1993
 – Co-authored paper reporting the very first measurement of cosmological time dilation (a general relativity effect) in gamma-ray bursts (GRBs) using time series data from the then orbiting Compton Gamma-ray Observatory (CGRO) / Burst and Transient Source Experiment (BATSE). Hence, the distance scale for GRBs was set for the first time.

Teaching Experience

- **Physics** Valencia College - Osceola, FL
Adjunct Professor *Spring, 2014 – Spring 2015*
 – Lecture, Recitation and Laboratory Instruction.

- **Physics, Mathematics** Valencia College - Osceola, FL
Tutor *Spring, 2014 – Fall 2015*
 – Physics and Mathematics

- **Astronomy** CUNY–Queens Borough Community College: Physics Department
Adjunct Associate Professor *Spring, 2014*
 – Astronomy Lecture and Laboratory Instruction with Astronomical Observations.
 – Conceptual Approach to Astronomy
 – Assist Students in successfully obtaining internships.

- **University, College Physics 1–2** St. Johns University: Physics Department
Adjunct Associate Professor *Fall, 2004–Spring 2008; Fall, 2013–Spring 2014*
 – Lecture and Recitation presentations, Laboratory Instruction.
 – Created extensive, intensive web-based and textbook assignments, examinations.
 – Students Majored in: Physics, Biology, Chemistry, Engineering and Mathematics.
 – At least half of the students were pre-medical or pre-dental school program participants.
 – Assisted Students in successfully obtaining internships: e.g., SURF at California Institute of Technology, Pasadena, CA.

- **Astronomy** St. Johns University: Physics Department
Adjunct Associate Professor *Fall, 2004–Spring 2008*
 – Astrophysics lecture course presentations.

- Created extensive, intensive web-based and textbook assignments, examinations.
- Extensive use of video and the web.
- Frontline research presented, incorporated and made relevant via practical applications.
- Lectures, presentations, projects emphasized practical spin-offs from research.
- Lectures demonstrated via video presentations how technology transfer is commercialized
- Students Majored in: Liberal Arts, Business, Science, Engineering and Mathematics.
- Many students were pre-medical, pre-dental, pre-law school program participants.
- Assisted Students in successfully obtaining internships and summer jobs.

• **Transport Processes**

United States Merchant Marine Academy (USMMA)

Adjunct Professor

Summer, Fall, 2007

- Presented Thermodynamics, Transport and Fluid Dynamics Lectures
- Led weekly labs guiding students through challenging, relevant projects.
- USMMA: A United States Academy
- USMMA: An engineering school with emphasis on mechanical engineering
- Most students are Mechanical Engineering Students, some were physics majors as well as mathematics majors
- All students are cadets at the United States Merchant Marine Academy
- USMMA: When cadets graduate they are US Navy Reserve Officers

• **University Physics with Calculus 1–2**

CUNY/Medgar Evers College

Adjunct Professor, Physical, Environmental and Computer Sciences *Spring, 2005–Spring, 2006*

- Lecture and Recitation presentations, Laboratory Instruction.
- Created extensive, intensive web-based and textbook assignments, examinations.
- Students Majored in: Physics, Biology, Chemistry, Engineering and Mathematics.
- At least half of the students were pre-medical or pre-dental school program participants.
- Assisted Students in successfully obtaining internships, summer jobs.

• **Astronomy**

CUNY/Medgar Evers College

Adjunct Professor, Physical, Environmental and Computer Sciences *Spring, 2005–Spring, 2006*

- Astrophysics lecture course presentations.
- Created extensive, intensive web-based and textbook assignments, examinations.
- Extensive use of video and the web for presentations, course management.
- Frontline research presented, incorporated and made relevant via practical applications.
- Lectures, presentations, projects emphasized practical spin-offs from research.
- Lectures demonstrated using video presentations how technology transfer is commercialized.
- Students Majored in: Liberal Arts, Business, Science, Engineering and Mathematics.
- Many students were pre-medical, pre-dental, pre-law school program participants.
- Assisted Students in successfully obtaining internships, summer jobs.

• **NASA–Science, Engineering, Mathematics, Aerospace Academy**

CUNY/York College

StarLab Instructor

Fall 2003–May, 2005

- Instruction in Astronomy, Astrophysics, Space Exploration and Space Science
- Astronomy and Astrophysics demonstrations in StarLab: an inflatable Planetarium.
- Students learned, via video demonstrations, how space is explored (with manned and un-manned spacecraft)
- Students were in grades 3-5 in Jamaica, Queens, New York City
- Result: Many former students extremely motivated to obtain advanced degrees in science, engineering, mathematics

- Result: Many former students extremely motivated to become a scientist, engineer or mathematician
- Result: Many former students extremely motivated to become hi-tech global business entrepreneurs and now have succeeded
- Reviewed proposal development and administration for a NASA-SEMAA division
- Parents received advisement supporting their student child to become a scientist, engineer, or mathematician: They were given demonstrations and lectures in the StarLab.
- Result: Families were significantly supported in developing their child's capabilities in Science, Technology, Engineering, Mathematics (STEM)

- **Physics & Astronomy, Computer Science** CUNY/Hunter College
Associate Professor *Spring–Fall, 2001*
 - Physics & Astronomy: Astronomy Course. Mostly liberal Arts, pre-law students and pre-medical students
 - Computer Science: Computer Architecture/Digital Design, Digital Signal Processing, Systems Engineering.
 - Computer Science: Digital Signal Processing: Graduate level course for engineering, physics, computer science, medical imaging students
 - Computer Science: Students Majored in Computer Science, Engineering, Mathematics, Physics.
- **Astronomy** University of Maryland System
Adjunct Professor *Spring, 2000*
 - Astronomy course lectures to Liberal Arts Majors
- **Physics** Lincoln University, PA
Professor *August 1998–May 1999*
 - Optics and Modern Physics Lectures
 - Implemented laboratory experiments: Internet Laboratory Simulations using Java
 - Students Majored in Physics, Engineering, Mathematics, Computer Science, Life Sciences
 - At least half of the students were pre-medical and pre-dental program participants

Research Areas

- High Energy Density Laboratory Astrophysics (HEDLA), High–Energy Astrophysics, High–Energy Density Physics (HEDP)
- Plasma Physics; Laser-induced charged particle acceleration, Beaming
- Plasma Physics Simulations: Particle in a Cell Simulations (PICLS). Implemented observational data and constraints to scale in a laboratory astrophysics investigation in a laboratory dedicated to fusion energy.
- Analysis of real or simulated (PICLS) data (Fourier Analysis, Wavelets, Autocorrelation, Pearson product-moment correlation, etc).
- Used simulation results in planning experimental testing and validation of theoretical models
- Collisionless energy exchange in interacting plasmas: a Quantum electrodynamical effect
- The role of scattering and interaction of an electromagnetic waves within interacting plasma to produce plasma turbulence.

- Multi-wavelength Astrophysics: High Energy Astrophysical Transients, e.g., gamma-ray bursts (GRBs)
- Laser-Driven Inertial Fusion Energy
- Laser Physics and Optics
- Space Exploration with detectors on orbiting satellites and interplanetary spacecraft
- Econophysics

Special Interest: Medical Applications of Laser-generated, Accelerated Plasma Beams

- Cancer: Oncology
- Diabetes: Neuropathy
- Cell – Printing

Computer Languages, Systems and Applications

- Data Analysis and measurements: Real and Simulated Data
- Operating Systems: Microsoft Windows, UBUNTU LINUX, Macintosh OS
- Word Processing: Microsoft Office Suite, Open Office
- Markup and Electronic Typesetting Language: LaTeX
- Programming Languages: Python, IDL and FORTRAN
- Laser-Plasma Simulations using Particle-in-Cell Algorithm

Research Experience

- **Centre National de la Recherche Scientifique (CNRS)** Université Bordeaux 1
Centre Lasers Intenses et Applications (CELIA) 2011–2012
 - USA Department of Defense Contractor, Consultant and Principle Investigator
 - U. S. Army sponsored research Awardee: energy transfer by laser-accelerated charged particles
 - Based on Fulbright Research: international collaboration research involves people from France, USA, Russia. The institutions are Lebedev Physical Science Institute of the Russian Academy, CELIA–Université Bordeaux 1–CEA
 - Result: International Collaboration demonstrates efficient, useful transfer of technology for the U. S. Army. All products were delivered on time and on Budget. To date, this is the largest grant of its kind ever awarded.
- **United States Fulbright Scholar** CELIA–Université Bordeaux 1
Research Physicist and Principle Investigator 2009–2010
 - Awarded for two years: research found to be vital to the Defense, Security, Energy and Space Exploration efforts of the USA and our European allies

- Traditional Fulbright–Aquitaine Research Scholar, United States of America Department of State & Aquitaine Regional Council Award; CELIA, CNRS, CEA.
- Bi-lateral Award: between the United States, France for Fusion Energy Research, Development, and Applications
- Project is about Astrophysics in the Laboratory
- Principle Investigator: Laboratory Astrophysical Transients with Applications for Inertial Confinement Fusion
- Established: Principle that High Energy Density Laboratory Astrophysics (HEDLA) works in parallel with traditional observation – led Astrophysics
- HEDLA evaluated and Emphasized: Scaling Laws to and from the laboratory and Astrophysical Objects
- Laser Plasma Interaction, Plasma Instabilities, Laboratory Astrophysics applications to Fusion Energy Research, Laser Driven Inertial Fusion Energy Generation
- Role of relativistic jets, shocks, afterglows (at the Laboratory Scale) in the GRB emission process. Emulated astrophysical conditions in a plasma physics laboratory dedicated to Fusion Energy Research. Weibel, 2-Stream Instabilities in the GRB emission process investigated at the laboratory scale. By colliding fast charged particle plasma beams, my collaboration induced and analyzed Weibel - like filamentary instability and demonstrated energy repartition between the ions, electrons and electromagnetic fields. The diagnostic requirements depends on th nature of the experimental investigation.
- Emulated astrophysical conditions in a plasma physics laboratory dedicated to Laser Inertial Fusion Energy (LIFE) Research
- Implemented: a goal oriented interdisciplinary research approach performed in the CELIA laboratory at the University of Bordeaux 1. Hence, A general research theme and conditions to produce significant research results in laboratory astrophysics has produced at least two new student research positions: that is, our collaboration creates jobs and wins funding. Scientific relationships were established during my two year tenure as a Fulbright Scholar at CELIA, and include efficient collaborations with several other groups and laboratories based on mutual interests as well as capabilities within the global community of physicists.
- Result: Laboratory Astrophysics Research Program at the Fusion Energy Group, CEA–University Bordeaux 1–CELIA–CNRS.
- Initiated: Affiliation with with the China - France SVOM (Space-based multi-band astronomical Variable Object Monitor) collaborative mission into space to study gamma-ray bursts: distant cosmic transients radiating gamma-rays
- Result: Significant contributions to astrophysics can be made a laboratory dedicated to laser fusion energy research

• **Photon Science and Applications**

Lawrence Livermore National Laboratory

Physics Faculty Scholar

Summer, 2006

- Research performed at the National Ignition Facility.
- Study demonstrated a possible way to ensure centering a constructive interference fringe on a coherently combined focal spot with 10th wave (0.3 fs) uncertainty.
- Simulated NIF-ARC CAPE diagnostic was developed, analyzed to uncover an analytical representation of phase surface containing dispersion terms as components of a Taylor Series Expansion in frequency.

• **Micro–Satellite Mission Design, Nano–Physics**

NASA/JPL

ASEE/NSFRO

Summer, 2005

- Guest Faculty Scholar, California Institute of Technology, Pasadena, California.

- Proposed High Energy Astrophysical Transients Educational Satellite (HEATES) on InspectorSat, a free flying system that detects external damage on satellites.
- Proposed use of Electrically Rheological fluids in the electrochemical tongue (laboratory on a chip) for Mars Rovers as an application of nano and micro technologies.
- The Deep Space Network / Goldstone Apple Valley Radio Telescope: A Tool for Bringing Observational Radio Astrophysics to the Classroom.
- Micro– and Nano–physics curriculum with laboratory exercises for universities.

- **High–Energy Astrophysics** US Naval Research Laboratory
Summer Faculty Research *Summer, 1999*

- Gamma-Ray Large Area Space Telescope (renamed Fermi) Calibration; World Wide Web Development and Publication.

- **High–Energy Astrophysics** National Academy of Sciences/National Research Council
Resident Research Associate *August 1995–June 1997*

- NASA/GSFC Laboratory for High Energy Astrophysics (LHEA), Greenbelt, MD.
- Gamma-ray Burst (GRB) Astrophysics.
- Analyze GRB time series data (gamma-ray counts per second vs. time) from the Burst and Transient Source Experiment (BATSE) on the then orbiting Compton Gamma-ray Observatory (CGRO) satellite.

- **High–Energy Astrophysics** NASA/GSFC-LHEA
Universities Space Research Association (USRA) Consultant *August 1994–July 1995*

- Obtain, evaluate, and interpret information via GRB time series data from the then orbiting BATSE on CGRO.

- **High–Energy Astrophysics** NASA Graduate Student Researchers Program
Research Assistant *April 1990–July 1994*

- NASA/GSFC-LHEA
- (GRB) Research via Analysis of GRB time series data from BATSE on CGRO
- Result: Co-authored article reporting Cosmological Time Dilation in GRBs. Thus, the distance scale for GRBs is set for the first time.
- Result: Ph. D. Dissertation reports Cosmological Time Dilation in GRBs – First of its kind
- Hence, GRBs are proven to be the most powerful explosions in existence. GRBs result from thermonuclear explosions. Therefore, an upper limit on the energy released in a thermonuclear explosion was set observationally. All of these results remain consistent to this day with recent measurements.
- Result: first measurement of Cosmological Time Dilation (a general relativity effect) in the Gamma-ray regime.
- Result: Models that use repeated injections from a stationary source as an explanation within special relativistic beaming: Galactic Halo interpretation are ruled out.
- Method: Measurements of pulse width, pulse rise / decay times, peakedness, amplitude within energy bands; Time dilation vs. energy dependent pulse narrowing.

- **Astrophysics** NASA Graduate Student Researchers Program
Research Assistant *September 1987–March 1990*

- NASA/GSFC–Laboratory for Astronomy and Solar Physics (LASP).
- Analysis of: Ultraviolet Spectral Data from orbiting International Ultraviolet Explorer (IUE) and IUE space telescope operator.
- Study and development of Stellar Evolutionary Codes in IDL.

- **Instrument Microelectronics**

NASA/GSFC

- *Summer Internship*

Summer, 1987

- Analysis and Laboratory testing for defects of imaging X-Ray detectors for Broad-Band X-Ray Telescope: a USA Space Shuttle Mission.
 - Results were summarized in presentation to then NASA/GSFC Director Townsend
 - Prepared and won proposals to fund Independent research at NASA/GSFC (NASA Graduate Students Researchers Program) and Ph. D. Degree from The Catholic University of America Department of Physics.

- **Instrument Electro-Optics**

NASA/GSFC

- *Summer Internship*

Summer, 1986

- Developed and tested a thermal model for an attached U. S. Space Shuttle payload for flight readiness. LIDAR used as a shuttle laser altimeter.
 - Results summarized in a technical presentation to then NASA/GSFC Director Noel Hinners.
 - Assisted with Winning proposal development. Learned of NASA Graduate Student Researchers program

Special Trainings for Laser Technology Transfer and Commercialization Completed

- 1) 29 November 2010–10 December, 2010: Optical Metrology and High Field Physics and Ultra Short and Ultra Intense Laser Sources from the PYLA Routes des Lasers education system. PYLA center is a component of ALPHANOV: an organization devoted to innovation–helping scientists, mostly physicists, determine which aspects of our research contains practical applications in France and Europe.

Laser Laboratory Safety Training Completed

- 1) June 2006: Lawrence Livermore National Laboratories: Extensive Safety Trainings for working with and around High Power Lasers.

Publications

- 1) “Numerical simulations of energy transfer in counter–streaming plasmas”, Davis, S. P., Capdessus, R., d’Humières, E., Jequier, S., Andriyash, I., Tikhonchuk, V., High Energy Density Physics, 9, (2013), 231
- 2) “Numerical simulations of energy transfer in two collisionless interpenetrating plasmas”, Davis, S. P., Capdessus, R., d’Humières, E., Brantov, A. V., Bochkarev, S., Tikhonchuk, V., European Physical Journal Web of Conferences, Volume 59, (2013)
- 3) “Energy transfer in counter–propagating plasmas at sub-relativistic velocities”, Tikhonchuk, V. T., Capdessus, R., d’Humières E., Jequier, S. and Davis, S. P., Proc. SPIE 8780, 2013
- 4) “Proton Beam Weibel Instability Simulations of Energy Transfer in Gamma-ray Bursts”, Davis, S. P., Tikhonchuk, V., d’Humires, E., Weber S., Journal of Physics: Conference Series, 244, 04206 (2010)

- 5) “Extracted Dispersion from Spectrally Dispersed Youngs Double Slit for the National Ignition Facility Coherent Addition of Pulses for Energy”, Stanley Davis, Michael Rushford, Antonio Lucianetti, Igor Jovanovic, Lawrence Livermore National Laboratory / National Ignition Facility, in-house LLNL Publication, 2006
- 6) “Coherent Addition of Pulse for Energy (CAPE) Instrument and Data Fitting Model Study”, UCRL-ABS-225307, Michael C. Rushford, Stanley Davis, Antonio Lucianetti, et. al., Lawrence Livermore National Laboratory, 2006
- 7) “Model for the Redshift and Luminosity Distributions of Gamma-Ray Blazars”, C. Dermer and S. P. Davis, 5th Compton Symposium Proceedings, 1999, AIP
- 8) “Pulse-Width, Pulse-Interval Distributions and Total Counts as Indicators of Time Dilation in Gamma-Ray Bursts”, Davis, S. P. RIKEN Review, 1997
- 9) “Measurements of Time Dilation in Gamma-Ray Bursts by Analysis of Temporal Structure”, Davis, S. P., 1995, NASA-GSFC/Laboratory for High Energy Astrophysics
- 10) “Measurement of Time Dilation in Pulse Widths and Intervals Between Pulses”, Davis, S. P. 1994, BAAS, 26
- 11) “Consistency of Time Dilation in Temporal Profiles and Spectra of Gamma-ray Bursts”, Norris, J.P., Nemiroff, R.J., Bonnell, J.T., Scargle, J.D., Davis, S.P., et al. 1995, Adv. Space Res., Vol 15, No. 5, pp. (5)135-(5)138, COSPAR
- 12) “Exploration of Bi-Modality in Gamma-Ray Burst Duration and Hardness Distributions”, Norris, J.P., Nemiroff, R.J., Davis, S.P., et al.: AIP Conference Proceedings 307, Huntsville Gamma-Ray Burst Workshop, 1994
- 13) “Pulse Width Distributions and Total Counts as Indicators of Cosmological Time Dilation in Gamma-Ray Bursts”, Davis, S.P., et al.: AIP Conference Proceedings 307, Huntsville Gamma-Ray Burst Workshop, 1994, 182
- 14) “Measurement of Signature Consistent with Cosmological Time Dilation in Gamma-Ray Bursts”, Norris, J.P., Davis, S.P., et al.: 23rd International Cosmic Ray Conference, 1993, Vol. 1, p.89; (<http://adsabs.harvard.edu/abs/1993ICRC....1...89N>)
- 15) “Calibration of an Algorithm for Overlapping Pulses in Gamma-Ray Bursts”, Davis, S.P., Norris, J.P., et al.: AIP Conference Proceedings 280, eds: M. Friedlander, N. Gehrels, Daryl J. Macomb, 1992, p.964
- 16) “Deconvolution of Pulses in Bright Gamma-Ray Bursts”, Norris, J.P., Davis, S.P., et al.: AIP Conference Proceeding 280, eds: M. Friedlander, N. Gehrels, Daryl J. Macomb, 1992, p.959
- 17) “Deconvolution of Pulse Structures in Gamma-Ray Bursts Observed by BATSE”, Davis, S. P., Norris, J.P., et al.: Bull. AAS. 23, 1323 (1992).

Publications in Preparation

- 1) “Numerical Simulations of Energy Transfer in Interacting Collisionless Counter-streaming Plasmas”, Davis, S. P., Capdessus, R., d’Humières, E., Brantov, A. V., Bochkarev, S., Jequier, S., Tikhonchuk V.; Astrophysics Journal, S. 2017

- 2) “Collisionless Interaction of Two Inter-penetrating Plasmas”, Davis, S. P., Tikhonchuk V., d’Humières, E., Bochkarev, Physics of Plasmas and Controlled Fusion S.2017

Internet Publications

- 1) *Stanley P. Davis Grantee Log: Fulbright/Aquitaine Research Scholar, 2009-2010 Centre Lasers Intenses et Applications, Université de Bordeaux 1: updated version coming soon*
- 2) *On-line Astrophysics: A Century of Great Discoveries: updated version coming soon*

Invited Presentations

- **Commissariat à l’énergie atomique (CEA), Department of Physics** Arpajon, France
Laboratory Astrophysics 4 February 2013
 - Title: Numerical simulations of energy transfer in counter-streaming plasmas: Electron heating and acceleration in two plasmas colliding at sub-relativistic velocities
 - Demonstrated significance of High Energy Density Laboratory Astrophysics for Fusion Energy and traditional observation – led Astrophysics
- **Institut de Recherche en Astrophysique & Planetologie** Université de Toulouse III
Laboratory Astrophysics 3 March 2011
 - Title: Ion Beam Instability Simulations of Energy Transfer in Gamma-ray Bursts via Laser Irradiation on Foil.
 - Reviewed capabilities of the Institut de Recherche en Astrophysique & Planetologie Université (IRAP) for space exploration.
- **Ministry of Foreign and European Affairs** Paris, France
Laboratory Astrophysics 5 October 2010
 - Title: Moving Fusion Energy Science Forward with a Fulbright France Award in Physics
 - Review: show that my Fulbright Research Scholar Award contributes to: 1) how *in situ* laboratory astrophysics investigations contributes to our understanding of exotic astrophysical phenomenon (e.g., observations of gamma-ray bursts, supernovae) and 2) making this knowledge applicable towards the the global effort to make clean fusion energy available, cheap as well inexpensive.
- **International Center for Relativistic Astrophysics Network** Pescara, Italy
Laboratory Astrophysics 28 June–July 1 2010
 - Title: Simulations of Energy Transfer in Gamma-ray Bursts via Laser Irradiation on CH–H⁺ Foil.
 - Visiting Scientist: Reviewed Theory and Simulations associated with GRB lightcurves.

Presentations

- *Numerical simulations of electron heating during energy transfer in a laser driven collisionless shock*

- 9th International Conference on High Energy Density Laboratory Astrophysics Tallahassee, Florida (30 April–4 May, 2012).
- *Numerical simulations of energy transfer in a laser driven collisionless shock*
 - European Conference on Laboratory Astrophysics (ECLA)–Eurosites–République Paris, France (September 26–30 2011).
- *Numerical simulations of energy transfer in a laser driven collisionless shock*
 - Inertial Fusion Sciences with Applications Bordeaux, France (12–16 September 2011).
 - Define the parameters and constraints for a laboratory experiment that serves as a test bed for ion-ion instabilities.
 - *in situ* Laboratory collisionless shock creation yields insight on interactions involving an external jet and the ISM (e.g., gamma-ray burst afterglows).
- *Proton Beam Instability Simulations of Energy Transfer in Gamma-ray Bursts via Laser Irradiation on CHH⁺ Foil*
 - GDRE Gamma-ray Burst School, Cargese, Corsica, France (May 17–22, 2010).
- *Weibel Instability Simulations for Gamma-ray Bursts as an Application of Laboratory Astrophysics with proposed experiments at the European LASERLAB consortium*
 - Inertial Fusion Sciences with Applications 2009–San Francisco, USA (September 2009).
- *Coherent Addition of Pulse for Energy (CAPE) Instrument and Data Fitting Study*
 - With M. C. Rushford: Signal and Imaging Science Workshop, National Ignition Facility of Lawrence Livermore National Laboratory, Livermore, CA, 16–17 November, 2006.
- *The Distance Scale of Gamma-Ray Bursts: A Review of Old and New Results*
 - Physics Department Colloquia–The Catholic University of America (14 April 1999).
- *Pulse-Width, Pulse-Interval Distributions and Total Counts as Indicators of Time Dilation in Gamma-Ray Bursts*
 - All - Sky X-Ray Observations in the Next Decade: a workshop for All-Sky Monitoring and Gamma-Ray Burst Missions in the X-Ray Band–The Institute of Physical and Chemical Research (RIKEN) Wako, Saitama, Japan (3–5 March, 1997).
- *Measurement of Time Dilation in Gamma-Ray Bursts by Analysis of Temporal Structure*
 - High–Energy Astrophysics Division 1996 (HEAD96)–San Diego, CA (1996).
- *High-Energy Astrophysics at NASA/GSFC*
 - Smithsonian Air and Space Museum–Washington, DC (1995).
- *Measurements of Time Dilation in Pulse Widths and Intervals Between Pulses in Gamma-Ray Bursts*
 - American Astronomical Society Meeting–Tucson, AZ (1995).
- *Gamma-ray Bursts*
 - American Institute of Physics–University of Maryland Day (1995).

- *Time Dilation in Gamma-Ray Bursts*
 - NATO Advanced Study Institute Course in High Energy Astrophysics, Erice, Sicily (May, 1994).
- *Pulse Width Distributions and Total Counts as Indicators of Cosmological Time Dilation in Gamma-Ray Bursts*
 - AIP Conference on Gamma-Ray Bursts–Huntsville, Ala. (1993).
- *Calibration of an Algorithm for Overlapping Pulses in Gamma-Ray Bursts*
 - Compton Symposium, St. Louis, MO–University of Washington (1992).
- *Deconvolution of Pulse Structures in Gamma-Ray Bursts Observed by BATSE*
 - American Astronomical Society, Atlanta, Ga. (1992).

Participation in Workshops and Conferences

- **2012 Omega Laser Facility Users Group Workshop** Laboratory for Laser Energetics
Rochester, NY 25–27 April 2012
- **4th HIPER Participant’s Forum** Mega Joule Laser / Petawatt Aquitaine Laser
Bordeaux, France 2–3 February 2012
 - Facilitator for Visit by the American Consul to Aquitaine Joel Maybury, Poitou-Charentes, and Limousin. Collaborated with Consul Maybury to develop USA State Department Policy Supporting HEDLA research as well as Laser Inertial Fusion Energy (LIFE).
- **Image de la Physique Fondamentale Aujourd’hui** Institut de Physique Fondamentale
Talence, France 19 December 2011
- **Physics with PETAL** New Laser Installation at LMJ and HIPER
Bordeaux, France 8–9 December 2011
- **Laboratory Astrophysics** Future Laser Installations: ELI project and Others
Paris, France 30 September 2011
- **Du Solide Au Plasma** Université Bordeaux 1, Talence, France
XI^{ème} Congrès SFP Plasmas October 4–8, 2010
- **Marcus Grossman 12: Gamma-ray Bursts, General Relativity** Paris, France
United Nations Educational, Scientific and Cultural Organization (UNESCO) 12–18 July, 2009
- **l’Atelier sur les sursauts gamma (Gamma-ray Bursts Workshop)** CEA–Saclay, France
China–France SVOM 19 October, 2009
- **Franco-Russian International Science and Technology Conference** Le Barp, France
Mega Joule Laser (LMJ) / Institute for Lasers and Plasmas March 9–11, 2009
 - Reviewed, toured the research capability and benefits of the LMJ
 - Discussed guest investigator funding for access to the LMJ target

Academic Service and Contributions

- Editing my CELIA Colleagues papers for publications and proposal submission:
 - e.g., Linear and non-linear high mode perturbations amplification at ablation front in direct-driven targets, Olazabal-Loume ét. al.
 - e.g., A simple stabilized finite element method for solving two phase compressible-incompressible interface flows M. Billaud ét. al.
- Advise Physics Ph. D. candidates and Post-Doctoral Research Associates
- Associate Editor, African Skies/Cieux Africains: A Publication of the Working Group for Space Science in Africa (e.g., No. 9, Cieux Africains, ISSN 10278389, July 2005).

Professional Societies and Associations

- European Physical Society: Plasma Physics Division.
- American Institute of Physics: Optical Society of America.
- Fulbright Alumni Association.
- African Astronomical Society.