

Truong V. Le

CURRICULUM VITAE

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EDUCATION:

- 1999-2004** **Ph.D. in Computational Astrophysics**
George Mason University (GMU), Fairfax, VA
- 1993-1995** **M.S. in Physics: Gravitational Physics**
Wichita State University (WSU), Wichita, KS
- 1989-1993** **B.S in Physics & Chemical Physics; Minor in Mathematics & Chemistry**
Wichita State University, Wichita, KS

CONTINUING EDUCATION:

- Mar 15-18, 2010 Spacecraft System Integration & Testing through Stinger Ghaffarian Technologies, Inc.
July 28-31, 2009 System Analysis and Design through Learning Tree International

SELECTED AWARDS, HONORS AND SCHOLARSHIPS:

- 2006-2007 Swift Guest Investigator Program – Cycle 3, “Explaining the Rapid X-ray Declines and Redshift Distribution of Swift GRBs”, Truong Le (Co-I), and Charles D. Dermer (PI); total award: \$40,000
- 2004-2007 National Research Council Research Associateship Award (NRC/NRL)
- 2004 Graduate Research Award (SCS, GMU)
- 2003 Graduate Research Award (SCS, GMU)
- 1994-1995 Best Teaching Assistant Award, Wichita State University, Wichita, KS
- 1989-1990 National Collegiate Minority Leadership Award
- 1989-1993 Minority Scholarship, Unhru Scholarship, Physics Department Scholarship

SERVICE AND PROFESSIONAL AFFILIATION:

- NASA Postdoctoral Program Reviewer
American Astronomical Society
VA Academy of Science Sciences Advisor

TEACHING EXPERIENCE:

- Current **Visiting Assistant Professor of Physics and Astronomy**
College of Charleston
Department of Physics & Astronomy
- 2010-2012 **Physics Instructor**
The Governor’s School for Science and Technology, Hampton, VA
1) Lecturing calculus-based physics with laboratory to talented and gifted Students (two classes per academic year)
2) Developing a university-physics level laboratory manual
- Winter 2012 **Invited Lecturer in Physics for Gifted and Talented Students from South Korea**
College of William and Mary
- Fall 2007 **Adjunct Professor in Physics and Astronomy**
Upper Iowa University, Fayette, IA
Online Training Program to teach a course in Introduction to Astronomy

1998-1999 **Physics Laboratory Instructor**
University of New Hampshire, Durham, NH
Responsible for instructing and evaluating students in 4 laboratory sessions per semester

1994-1995 **Physics Laboratory Instructor**
Wichita State University, Wichita, KS
Responsible for instructing and evaluating students in 3 laboratory sessions per semester

RESEARCH INTERESTS:

- Accretion disk flow structure of compact objects and its stability
- Particle acceleration and the production of outflows from accretion disks around black holes
- Time-dependent models for particle acceleration in astrophysical plasmas
- Radiation processes in the vicinity of black holes
- Developing Computational Fluid Dynamics Codes
- Astronomical Instrumentation
- Basic research in fundamental physics: theoretical and experimental
- Cosmology: theory & observation
 - How to accurately measure the age of the Universe, and searching for new ways that give tighter constraints on cosmological parameters
 - Gamma Ray Bursts and its connection to cosmology
 - Dark Matter
 - Large-scale structure simulation

RESEARCH MENTORSHIP: Governor's School for Science & Technology

2) **Joy Putney**; Fall 2011-present; major: Physics & Engineering
Research Title: Estimating the Initial Jet Radii of 19 high-power radio-loud Fermi Blazars

1) **Cassandra Brown**; Fall 2011-present; major: Physics & Engineering
Research Title: A Correlation Study between Observed Jets Powers, Mass Accretion Rates, and Initial Jet Radii of 14 selected low-power radio-loud AGNs

RESEARCH EXPERIENCE:

2008-2011 **Programmer Analyst/Senior Software Engineer/Research Scientist**
Space Telescope Science Institute/Computer Science Corporation

- Support the development of the James Webb Space Telescope through Operation Scripts Subsystem (participate in Ops & Spacecraft Command Working Groups; generate, design, and implement scripts requirements; prepare test plans, procedures, and reports; conduct script testing; maintain spacecraft command and telemetry mnemonics database; generate requirements, test plans, test reports, and liens from DOORS; conduct peer reviews of all products)
- Support the development of the James Webb Space Telescope through Integrating & Testing Subsystem (participate in test plan and test procedure reviews; develop components system simulators; simulate and generate test data; conduct peer reviews of all products)

2004-2007 **NRC/NRL Postdoctoral Fellowship**
Naval Research Laboratory, Washington, DC

- Hydrodynamics Instability in Advection-Dominated Accretion disks around black holes using linear perturbation.
Advisors: Drs. Kent S. Wood (NRL), Michael T. Wolff (NRL), & Peter A. Becker (GMU)
- Understanding the time-dependent models for particle acceleration in astrophysical plasmas.
Advisors: Dr. Charles D. Dermer (NRL) & Dr. Peter A. Becker (GMU)

- Determining the Gamma Ray Burst (GRB) formation rate based on the GRBs redshift distribution from the pre-Swift and Swift observations.
Advisor: Dr. Charles D. Dermer (NRL)
 - Gamma Ray Burst Predictions for the Fermi Gamma Ray Space Telescope.
Advisor: Dr. Charles D. Dermer (NRL)
- 2000-2004 **Research Assistant (Dissertation Topic)**
George Mason University, Fairfax, VA
Dissertation Topic: Understanding the theoretical aspect of one-dimensional accretion disk with shocks and relativistic outflows around black holes.
Advisor: Dr. Peter Becker (GMU)
- 1999-2000 **Research Assistant**
NASA Goddard Space Flight Center (GSFC), Greenbelt, MD
Research Topic: Understanding the theoretical aspect of Cosmic-Ray Modified Shocks Structure and Stability.
Advisors: Dr. Peter Becker (GMU) & Dr. Kazanas Demo(NASA, GSFC)
- 1999 **Summer Research Assistant**
NASA Goddard Space Flight Center, Greenbelt, MD
Research Topic: Understanding the Origin of the X-Ray and Ultraviolet Emission in NGC 7469 through data analysis based on the data from RXTE.
Advisor: Dr. Kirpal Nandra (NASA, GSFC)
- 1995-1998 **Research Staff**
AETC Incorporated, San Diego, CA
- Modeling, simulating and developing software to process and analyze real time data
 - to detect, locate, and classify Unexploded Ordnance of underground objects
 - to understand submarine structural acoustics
 - to detect, locate, and classify objects (submarines, ship wrecks, school of fish, dolphins,...) in shallow water environments
 - Develop and use advanced underwater broadband acoustic processing and advanced signal processing techniques to enhance detectability and locate submarines and objects in shallow water environments
- 1994-1995 **Research assistant (Master's Thesis)**
Wichita State University, Wichita, KS
Thesis Topic: Understanding how light propagate in a non-inertial frame.
Advisor: Dr. Joseph Strecker
- 1991 **Summer Research Internship**
University of Colorado at Boulder, Boulder, CO
Research Topic: Updating distance of the galactic supernovae remnants as a participant in a summer research experience for undergraduates program.
Advisor: Dr. Michael Shull
- 1991-1992 **Undergraduate Projects (Senior Project)**
Wichita State University, Wichita, KS
Advisor: Dr. Elizabeth Behrman
- Modeling and simulating the orbits of n-body problem
 - Modeling and simulating the motion of an object on the spinning rod

COMPUTER EXPERIENCE:

Programming Languages: JavaScript, Cecil, ECLIPSE real time commanding, Python, Tcl/Tk, awk, C, Fortran, Pascal, Basic, HTML
Operating Systems: Unix, Linux, OS/2, Window, Apple, VAX/VMS, and MS-DOS
Software Packages: FTools & Xanadu, fv, PyFITS, NumPy, ds9, IDL, PVwave, Mathematica, and Matlab
Microsoft Suite products: power-user of MS Excel, MS PowerPoint, and MS Word
Database: MS-Access database, Altova Authentic-XML database, DOORS

REFEREED PUBLICATIONS: (* indicates with my student)

- *15. **Le, T.**, Brown, C., Becker, P. A., Gehrels, N. ``Jet Locations and Mass Accretion Rates of 14 Low-Power Radio-Loud AGNs'', 2012, in preparation.
14. **Le, T.**, Wood, S. K., Wolff, M. T., & Becker, P. A. ``Hydrodynamics Instability in Advection-Dominated Accretion Disks with Standing Shock Waves'', 2012, in preparation.
13. Becker, P. A., **Le, T.**, Das, S. ``Particle Acceleration in Viscous Accretion Disks with Shocks: Green's Function Energy Distribution'', 2011, ApJ. Vol. 743, Page 47.
12. Das, S., Becker, P. A., & **Le, T.** ``Dynamical Structure of Viscous Accretion Disks with Shocks'', 2009, ApJ, Vol. 702, page 649.
11. **Le, T.**, & Dermer, C., D., ``Gamma Ray Burst Predictions for the Fermi Gamma Ray Space Telescope'', 2009, ApJ, Vol. 700, page 1026.
10. Becker, P. A., Das, S., & **Le, T.** ``Particle Acceleration and the Formation of Relativistic Outflows in Viscous Accretion Disks with Shocks'', 2008, ApJ Letter, L93.
9. **Le, T.**, & Dermer, C., D., ``Gamma Ray Bursts in the Swift and GLAST Era'', 2007, The First GLAST Symposium. AIP Conference Proceeding, Vol. 921, Page 462.
8. Dermer, C. D., Ramirez-Ruiz, E., **Le, T.**, ``Correlations between Photon and High-Energy Neutrino Fluxes in Blazars and Gamma Ray Bursts'', 2007, ApJL, Vol. 664, page L67.
7. **Le, T.**, & Becker, P. A., ``Particle Acceleration in Advection-Dominated Accretion Disks with Shocks: Green's Function Energy Distribution'', 2007, ApJ, Vol. 661, page 416
6. **Le, T.**, & Dermer, C. D., ``On the Redshift Distribution of Gamma Ray Bursts in the Swift Era'', 2007, ApJ, Vol. 661, page 394
5. Becker, P. A., **Le, T.**, & Dermer, C. D., ``Time-Dependent Stochastic Particle Acceleration in Astrophysical Plasmas: Exact Solutions Including Momentum-Dependent Escape'', 2006, Astrophysical Journal (ApJ), Vol. 647, page 539
4. **Le, T.**, & Becker, P. A., ``Particle Acceleration and the Production of Relativistic Outflows in Advection-Dominated Accretion Disks with Shocks'', 2005, ApJ, Vol. 632, page 476.
3. **Le, T.**, & Becker, P. A., ``A Self-Consistent Model for the Formation of Relativistic Outflows in Advection-Dominated Accretion Disks with Shocks'', 2004, Astrophysical Journal Letters (ApJL), Vol. 617, page L25.
2. Becker, P. A., & **Le, T.**, ``Inner Boundary Conditions for Advection-Dominated Accretion onto Black Holes'', 2003, ApJ, Vol. 588, page 408.
1. Nandra, K., **Le, T.**, George, I. M., Edelson, R. A., Mushotzky, R. F., Peterson, B. M., & Turner, T. J., ``The Origin of the X-Ray and Ultraviolet Emission in NGC 7469'', 2000, Astrophysical Journal (ApJ), Vol.544, page 734.

INVITED PUBLIC OUTREACH TALKS:

3. **Le, T.**, “Physics with demonstration to kindergarten students”, Seaford Elementary School, Yorktown, VA, Mar. 2012
2. **Le, T.**, “Our place in the universe to 1st grade students”, Vincent Farm Elementary School, White Marsh, MD, Nov. 2009
1. **Le, T.**, “Exploring objects in space to pre-K students”, Cardinal Montessori School, Woodbridge, VA, Apr. 2007.

CONFERENCES PROCEEDING AND ABSTRACTS OF TALKS: (* indicates with my students)

- *22. Cave, B., DeGrace, C., Butler, J., Wilkerson, M., & **Le, T.**, “Maximizing the Acceleration and Fuel Efficiency for Vehicle at a Particular Price Point” (won Special Award at 2012 Tidewater Science Fair).
- *21. Cragg, P., Trepte, M., Kenny, A., & **Le, T.**, “Wind Energy: Harvesting Power Through Cars” (won Special Award at 2012 Tidewater Science Fair).
- *20. Douchess, C., Buffkin, J., McCarter, R., & **Le, T.**, “The Mass to Electricity Ratio of Lift in the Biefeld-Brown Effect: An Experiment” (Honorable Mention at 2012 Tidewater Science Fair).
- *19. Douchess, C., Buffkin, J., McCarter, R., & **Le, T.**, “The Mass to Electricity Ratio of Lift in the Biefeld-Brown Effect: An Experiment” (Honorable Mention at 2012 Tidewater Science Fair).
- *18. Chambers, L., Luchtenberg, A., Chanza, R., Gonzalez, M., & **Le, T.**, “Altering Roof Structures to Maximize Solar Power Efficiency” (submitted to VA Academy of Science 90th Annual Meeting).
- *17. Sharlette, A., Hayward, M., & **Le, T.**, “The Effect of a Magnetic Configuration on the Production of Electricity”, Hampton University 17th Annual Student Research Symposium, Hampton, VA, Feb. 10, 2012.
- *16. Stewart, S., Rosen, Z., chasten-Boyd, D., Reese, C., & **Le, T.**, “Most Efficient Alternative Filling for Sandbags”, Hampton University 17th Annual Student Research Symposium, Hampton, VA, Feb. 10, 2012 (3rd place at 2012 Tidewater Science Fair; submitted to VA Academy of Science 90th Annual Meeting).
- *15. Silveria, C., Matthews, J., Pandolf, J., Murray, D., & **Le, T.**, “Different swim Suits: A Noticeable Difference?”, Hampton University 17th Annual Student Research Symposium, Hampton, VA, Feb. 10, 2012 (3rd place award; honorable mention at 2012 Tidewater Science Fair; submitted to VA Academy of Science 90th Annual Meeting).
- *14. Brown, C. & **Le, T.**, “A Correlation Study between the Jet Locations, Mass Accretions and Jet Power of 14 Radio-Loud AGNs”, Hampton University 17th Annual Student Research Symposium, Hampton, VA, Feb. 10, 2012 (1st place award; submitted to VA Academy of Science 90th Annual Meeting).
13. **Le, T.**, Becker, P. A., Das, S., “Formation of Relativistic Outflows in ADAF Disks with Shocks”, Hampton University 17th Annual Student Research Symposium, Hampton, VA, Feb. 10, 2012
12. Attend the “Proposal Planning Subsystem System Design Review Infrastructure & Shared Components”, Space Telescope Science Institute, Baltimore, MD, Jan. 22, 2009
11. Attend the “JWST Integrated Science Instrument Module Flight Software”, Computer Science Corporation, Lanham-Seabrook, MD, April 29 – May 1, 2008
10. Attend the “JWST Preliminary Design Review”, NASA Goddard Space Flight Center, Greenville, MD, March 31 – April 4, 2008
9. Attend the “Science & Operations Center Proposal Planning Subsystem System Requirements Review”, Space Telescope Science Institute, Baltimore, MD, Feb. 19, 2008

8. Attend the “James Webb Space Telescope Operations Scripts Subsystem Preliminary Design Review”, Space Telescope Science Institute, Baltimore, MD, Jan. 22 – 24, 2008
7. **Le, T.**, & Dermer, C. D., “Gamma Ray Bursts in the Swift and GLAST Era”, 1st GLAST Symposium, Palo Alto, CA, Feb. 5-8, 2007
6. **Le, T.**, Becker, P. A., “Jets and Accretion Disks ‘’, Relativistic Jets: The Common Physics of AGN, Microquasars and Gamma-Ray Bursts Meeting, 2005, at Ann Arbor, MI.
5. **Le, T.**, Becker, P. A., “Particle Acceleration in Advection-Dominated Accretion Disks”, TeV Particle Astrophysics Meeting, 2005, Fermilab, Batavia, IL.
4. **Le, T.**, & Becker, P. A., “Self-Consistent Model for Relativistic Outflows from Advection-Dominated Accretion Disks”, AAS Meeting #203, 2004, B.A.A.S.
3. **Le, T.**, & Becker, P. A., “Advection-Dominated Accretion Flows with Outflows”, AAS Meeting #199, 2001, B.A.A.S.
2. Becker, P. A., & **Le, T.**, “Inner Boundary Conditions for Advection-Dominated Accretion onto Black Holes”, AAS Meeting #199, 2001, B.A.A.S.
1. Becker, P. A., **Le, T.**, & Kazanas, D., “Cosmic-Ray Modified Shocks: Structure and Stability”, HEAD Meeting #32, 2000, B.A.A.S.

REFERENCES:

- 1) **Peter A. Becker**; Professor, Associate Dean for Graduate Programs; George Mason University; Fairfax, VA 22030-4444; phone: (703) 993-3619; email: pbecker@osf1.gmu.edu
- 2) **David Moffatt**; The Governor’s School for Science and Technology; Hampton, VA 23666; phone: (434) 390-9371; email: dsmoffatt@hotmail.com
- 3) **Bruce Chittenden**; The Governor’s School for Science and Technology; Hampton, VA 23666; phone: (757) 412-8746; email: brucec@brucec.com