

# Curriculum Vitae

## Lan Quynh Nguyen

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### RESEARCH INTERESTS

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Stellar Evolution  
Binary Neutron Star  
Dark matter and Galaxy formation  
Polarization of the Cosmic Microwave Background and CMB foregrounds

### EDUCATION

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Ph.D. in Physics 2006  
Institute of Physics, Vietnam Academy of Science and Technology  
• Ph. D. Dissertation: *Self Interacting Dark Matter in the beyond standard model*

M.S. in Physics 2001  
Institute of Physics, Vietnam Academy of Science and Technology

B.S. in Physics 1994  
Vinh University, Vietnam

### APPOINTMENTS

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Adjunct Associate Professor *August 2016 - present*  
University of Notre Dame, IN, USA

Associate Professor *November 2010 - July 2017*  
Hanoi National University of Education, Vietnam  
    Head of the General Physics Division *January 2013-November 2016*  
    Hanoi National University of Education, Vietnam

Lecturer *June 2004 - October 2010*  
Hanoi National University of Education, Vietnam

Lecturer *January 1994 - May 2004*  
Vinh University, Vietnam

### ADJUNCT TEACHING POSITIONS

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Instructor *June 2018 - August 2018*  
Center for Talented Youth, Johns Hopkins University, MD, USA

Adjunct Lecturer *January 2018 - May 2018*  
Saint Mary's College, IN, USA

Adjunct Lecturer *2013 - 2016*  
University of Science and Technology of Hanoi, Vietnam

### VISITING RESEARCH POSITIONS

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Visiting Assistant Professor  
University of Notre Dame, IN, USA

January 2010 - May 2010

Research Associate  
University of Notre Dame, IN, USA

January 2006 - June 2006; October 2010 - July 2011

Visiting Research Associate  
Yukawa Institute of Theoretical Physics, University of Kyoto, Japan

February 2014 - March 2014, February 2016 - March 2016

Visiting Research Associate  
Theoretical Physics Division, The European Organization for Nuclear Research (CERN), Switzerland

June 2007 - August 2007, October 2008 - September 2008

## AWARDS

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APS International Travel Grant Award Program (ITGAP) 2009, 2016

International Astronomical Union Travel Grant Award 2006, 2012, 2014

## TEACHING

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Courses taught at CTY - John Hopkin University, MD, USA

- Astrophysics Summer 2018

Courses taught at Saint Mary's college, IN, USA

- PHYS 444: Electricity and Magnetism Spring 2018

Courses taught at The University of Science and Technology of Hanoi, Vietnam

- PHYS 311: Introduction to Astronomy 2013 - 2016
- Advanced Astrophysics, Graduate course 2013 - 2015

Courses taught at Hanoi National University of Education, Vietnam

- PHYS 311: Introduction to Astronomy 2007 - 2016
- PHYS 439: Introduction to Astrophysics 2007 - 2016
- PHYS 390: Introduction to Cosmology 2007 - 2016
- PHYS 121: Classical Mechanics 2004 - 2006

Courses taught at The Vinh University, Vietnam

- PHYS 224: Theoretical Mechanics 2001 - 2002
- PHYS 311: Introduction to Astronomy 2000 - 2003
- PHYS 144: General Physics 2000 - 2003
- PHYS 233: Physics Lab 1994 - 1999

Students supervised:

Undergraduate students: 12; Master's students: 8; Co-advisor Doctoral students: 2.

## PROFESSIONAL SERVICE

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Scientific organizing committees:

- The 48th International Symposium on Multi-particle Dynamics (ISMD), Singapore, September 2018.

- The 4th The KAGRA International Workshop, Korea, June 2018.
- The Asian-Pacific Regional International Astronomical Union Meeting, Taiwan, July 2017.
- The Hanoi International Workshop on Gravitation and the Universe, Vietnam, November 2016.
- The "Cosmic Flows" Workshop, Vietnam, July 2016.
- The Asian-Pacific Regional International Astronomical Union Meeting, Korea, August 2014.
- The 2nd International Workshop on Theoretical and Computational Physics (IWTCP-2), Vietnam, August 2014.
- The Workshop Cosmology in the Planck Era, Vietnam, July 2013.
- Schools and workshops on Astrophysics of the Teaching Astronomy for Development, Vietnam, July 2007 and November 2011.

#### Local Organizing Committee:

- Hot Topics in General Relativity and Gravitation, Vietnam, 2013, 2015, 2017.
- The Window on the Universe workshop, Vietnam, 2013.
- The 10th International Conference on Astrophysics, Gravitation and Cosmology, Vietnam, 2011.
- Schools and workshops on Astrophysics of the Teaching Astronomy for Development, Vietnam, 1997, 2001, 2003, 2007, 2011.

#### Professional society memberships:

- Large-scale Cryogenic Gravitation Wave Telescope Project(KAGRA) Scientific collaboration,
- International Astronomical Union (Division Education, Outreach and Heritage; Division Stars and Stellar Physics; Division Galaxies and Cosmology).
- American Physical Society (APS).

Review grant proposals for Vietnam National Foundation for Science and Technology Development.

#### Outreach activities:

- Judge section chair, Northern Indiana Regional Science and Engineering Fair, University of Notre Dame, USA, March 2018.
- Total Eclipse event, University of Notre Dame, USA, August 2017.
- Head of the Vietnamese Team, Asian Science Camp, Bangkok, Thailand, August 2015.
- Head of the Vietnamese Team, 8th International Science Youth Forum, Singapore, January 2016.
- Judge on Theoretical section, International Physical Olympic, Hanoi, Vietnam, July 2008.
- Vietnam Coordinator for Teaching Astronomy for Development (TAD) program of the International Astronomical Union, 2007-2011.

### DEPARTMENT SERVICE

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| • Assistant Dean for Graduate studies  | 2011 - 2013 |
| • Graduate student research committees   | 2010 - 2016 |
| • Assistant Dean for undergraduate studies   | 2007 - 2009 |
| • Developed courses Introduction to Astrophysics (PHYS 439) and Cosmology (PHYS 439) |             |

### FUNDING

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| • Ministry of Education Research Grant, Vietnam (PI)                       | 2014 - 2016 |
| • National Foundation for Science and Technology Development, Vietnam (PI) | 2010 - 2012 |
| • Ministry of Education Research Grant, Vietnam (PI)                       | 2008 - 2009 |
| • Hanoi National University of Education, Vietnam (PI)                     | 2008        |

## PROGRAMMING LANGUAGES

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Python, FORTRAN, Matlab

## PUBLICATIONS AND PRESENTATIONS

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### Books and Chapters in Books

1. Fundamental Astrophysics (Vietnamese), Nguyen Dinh Noan, Nguyen Dinh Huan, Phan Van Dong, **Nguyen Quynh Lan**, Viet Nam Education Publishing House, Vietnam, 2008.
2. Search for the Higgs Boson (Editors: John V. Lee), Chapter 6: Candidates for Dark Matter in the Models, pp. 117-138, Hoang N. Long, **Nguyen Quynh Lan**, Dang V. Soa and Le N. Thuc, Nova Science Publishers, ISBN: 1-59454-861-7, 2006.

### Articles (refereed)

1. Spinning dust emission from circumstellar disks and its role in excess microwave emission, Hoang Thiem, **Nguyen Quynh Lan**, Nguyen Anh Vinh, Kim Yun Jeong; Submitted, The Astrophysical Journal, (2018).
2. Analysis of the Conformally Flat Approximation for Binary Neutron Star Initial Conditions, In-Saeng Suh, Grant J. Mathews, Reese Haywood and **Nguyen Quynh Lan**, Advances in Astronomy, 6127031 (2017).
3. Spinning dust emission from ultra-small silicates: emissivity and polarization spectrum, Thiem Hoang, Nguyen Anh Vinh, **Nguyen Quynh Lan**, The Astrophysical Journal, 824, 18 (2016).
4. Evolution tracks for Betelgeuse, M. Dolan, G. Mathews, Doan D. Lam, **Nguyen Quynh Lan**, Gregory J Herczeg, David Dearborn, The Astrophysical Journal, 819, 7 (2016).
5. Gravitational Waveforms from Multiple Orbit simulations of Binary neutron stars, **Nguyen Quynh Lan**, In-Saeng Suh, Grant J. Mathews and J. Haywood, Communications in Physics, 25 (2015).
6. Constraints on pre-inflation fluctuations in a nearly flat open Lambda-CDM cosmology, Grant J. Mathews, I-S. Suh, **Nguyen Quynh Lan**, and T. Kajino, Physical Review D 92, 123514 (2015).
7. Origin and Evolution of structure for Galaxies in the Local group, **Nguyen Quynh Lan**, Grant J. Mathews, Nguyen A. Vinh, Doan D. Lam, Publication of the Korean Astronomical Society, 30, 521-523 (2015).
8. Constraints on pre-inflation cosmology and Dark flow, Grant J. Mathews, **Nguyen Quynh Lan**, T. Kajino, Publication of the Korean Astronomical Society, 30, 309-313 (2015).
9. Formulation and constraint on late decaying dark matter, **Nguyen Quynh Lan**, Nguyen A. Vinh, Grant J. Mathews, Publication of the Korean Astronomical Society, 30, 315-319 (2015).
10. Origin and Evolution of Structure and Nucleosynthesis for Galaxies in the Local Group, G.J. Mathews, A Snedden, L.A. Phillips, I-S Suh, J. Coughlin, A. Bhattacharya, X. Zhao, **Nguyen Quynh Lan**, Modern Physics Letters A, 29, 14 (2014).
11. QCD Matter in White Dwarfs and Supernova Collapse, Grant Mathews, M. Meixner, **Nguyen Quynh Lan** and In-S. Suh, Progress of Theoretical Physics Supplement, 186 (2010).
12. Constraints on early star formation and mixing from nucleosynthesis in protogalactic cloud, **Nguyen Quynh Lan**, Nguyen T. Giang, Grant J. Mathews, Lamya Saleh, Communication in Physics, 20, 1 (2010).
13. Ohmic currents and pre-decoupling magnetism, Massimo Giovannini and **Nguyen Quynh Lan**, Physical Review D 80, 027302 (2009).
14. Cosmic acceleration and bulk viscosity from late decaying dark matter, **Nguyen Quynh Lan** and Grant J. Mathews, Communication in Physics, 19, 2 (2009).

15. Alternative Unified on Dark Matter and Dark Energy, Grant J. Mathews, K. Ichiki, T. Kajino, **Nguyen Quynh Lan**, X. Zhao, *Modern Physics Letters A*, 23, 17 (2008).
16. Late Decaying Dark Matter, Bulk Viscosity, and the Cosmic Acceleration, Grant J. Mathews, Nguyen Q. Lan, Chris Kolda, *Physical Review D* 78, 043525 (2008).
17. Self-Interacting Dark Matter in the 331 models, **Nguyen Quynh Lan** and Hoang Ngoc Long, *Astrophysics and Space Science*, 305, 225-233 (2006).
18. Analysis of White Dwarfs with Strange-Matter Cores, Grant J. Mathews, InSaeng. Suh, B. O'Gorman, **Nguyen Quynh Lan**, William Zech, Kaori Otsuki, F. Weber, *Journal Phys. G* 32:747-760 (2006).
19. Higgs bosons in a Supersymmetric 331 Model with right-handed neutrinos, Do T. Huong, **Nguyen Quynh Lan** and Hoang N. Long, *Communication in Physics*, 15, 4 (2005).
20. Self-Interacting dark matter and Higgs bosons in the 331 model with right-handed neutrinos, Hoang N. Long and **Nguyen Quynh Lan**, *Europhys. Lett.* 64(4), 571-577 (2003).
21. The 331 models with biquark gauge boson, **Nguyen Quynh Lan** and Hoang N. Long, *Communication in Physics*, 12, 164-172 (2002).

#### Conference Proceedings (refereed)

1. The status of KAGRA underground cryogenic gravitational wave telescope. T. Akutsu et. al. Kara collaboration. Proceedings for XV International Conference on Topics in Astroparticle and Underground Physics (TAUP2017).
2. Cosmological constraints on dark energy via bulk viscosity from decaying dark matter, **Nguyen Quynh Lan**, G. J. Mathews, I-S Suh, *Proceeding of the 9th Rencontres du Vietnam: Windows on the Universe*, 389-393 (2013).
3. Updates of the nuclear equation of state for core-collapse supernovae and neutron stars: effects of 3-body forces, QCD, and magnetic fields, Grant Mathews, M. Meixner, J. P. Olson, I-S Suh, T. Kajino, T. Maruyama, J Hidaka, C.-Y. Ryu, M.-K Cheoun, **Nguyen Quynh Lan**, *Journal of Physics: Conferences Series* 445, 012023 (2013).
4. The NDL Equation of State for Neutron Star and Supernova Simulations, Matthew A Meixner, Olson Pocahontas, Grant J Mathews, **Nguyen Quynh Lan**, H. E. Dalhed. American Physical Society, APS April Meeting (2013).
5. Stochastic star formation and early galactic nucleosynthesis, **Nguyen Quynh Lan** and Grant Mathews, *IAU Symposium No. 292*, Cambridge University Press (2012).
6. Origin and Evolution of Structure and Nucleosynthesis for Galaxies in the Local Group, Grant Mathews, X. Zhao, **Nguyen Quynh Lan**, *ASP Conference Proceedings*, Astronomical Society of the Pacific, 261 (2012).
7. Some Alternative Unified Views for Dark Energy and Dark Matter, Grant Mathews, X. Zhao, K. Ichiki, T. Kajino, **Nguyen Quynh Lan**, *Proceedings of the Twelfth Marcel Grossmann Meeting on General Relativity*, 1296 (2012).
8. Observational constraints on the decaying dark matter model by using Markov Chain Monte Carlo approach, Nguyen V. Khanh, **Nguyen Quynh Lan**, Nguyen A. Vinh, Grant J. Mathews, *Proceedings of the 10th international conference on Gravitation Astrophysics and Cosmology*, 190-195 (2011).
9. Dark energy as Bulk Viscosity from decaying dark matter, **Nguyen Quynh Lan**, Nguyen V. Khanh, Grant Mathews, In-Saeng Suh, *Proceedings of the 10th international conference on Gravitation Astrophysics and Cosmology*, 196-198 (2011).
10. Dark Energy and Decaying Dark Matter, Grant Mathews, **Nguyen Quynh Lan**, James Wilson, *The eleventh Marcel Grossman Meeting on General Relativity*, Published by World Scientific Publishing Co. Pte. Ltd., 1776-1778 (2006).

11. Evidence for White Dwarfs with Strange-Matter Cores, Grant Mathews, In-Saeng Suh, **Nguyen Quynh Lan**, Kaori Otsuki, Fridolin Weber, The eleventh Marcel Grossman Meeting on General Relativity, Published by World Scientific Publishing Co. Pte. Ltd., 1183-1185 (2006).
12. Dark matter and Dark Energy, Grant Mathew, **Nguyen Quynh Lan**, Chris Kolda, Proceedings of the Challenges In Particle Astrophysics, Vietnam (2006).
13. Dark Matter in the 331 models, Hoang N. Long, **Nguyen Quynh Lan**, Dang V. Soa and Le N. Thuc, Proceedings of the 9th Asia Pacific Physics Conference (2004).
14. Gauge theory for Self-Interacting dark matter, Hoang N. Long and **Nguyen Quynh Lan**, Proceedings of the 26th Vietnam National Conference on Theoretical Physics (2003).
15. The coupling of bileptons with usual gauge bosons in the minimal  $SU(3)_C \times SU(3)_L \times U(1)_Y$  model, D. Soa, H. Long, D. Binh, **Nguyen Quynh Lan** et al., Japan Summer Institute Proceeding, B45 (2002).

## Presentations

1. Self Interacting Dark Matter and the Galaxy Core-Cusp Problem, APS meeting, Columbus, USA, April 2018.
2. Constraints on interacting dark matter from small scale structure High Energy Physics Seminar, University of Virginia, USA, Nov. 2017.
3. Gravitational Waveforms from Multiple-Orbit Simulations of Binary Neutron Stars, Midwest Relativity meeting, University of Michigan, USA, August 2017.
4. Dark Matter and small scale structure, Midwest Theoretical physics meeting, Argonne National Laboratory, USA, August 2017.
5. Magnetic field in the standard Cosmology Model, Midwest Magnetic field meeting, University of Wisconsin-Madison, USA, May 2017.
6. Constraint of the Self Interacting Dark Matter, Astronomy Seminar, University of Wisconsin-Madison May 2017
7. Interacting Dark Matter and the Galaxy Core-cusp Problem, Astrophysics Seminar, University of Notre Dame, USA, April 2017.
8. Constraints on pre-inflation fluctuations in a nearly flat open Lambda-CDM cosmology, 22nd International Symposium on Particles, Strings and Cosmology (PASCOS), Vietnam, July 2016.
9. Equation of State dependence of the Gravitation Waves from Simulation of binary neutron star, Face to face KAGRA meeting, Japan, April 2015.
10. Binary Neutron star, Astrophysics Seminar, Osaka City University, Japan, April 2015.
11. Beyond standard model for Dark Matter, High Energy Physics seminar, National University of Singapore, January 2015.
12. Formulation and Constraints on Late Decaying Dark Matter, 12th Asia-Pacific Regional IAU Meeting, Korea, August 2014.
13. Constraints on Pre-Inflation Cosmology and Dark Flow, 12th Asia-Pacific Regional IAU Meeting, Korea, August 2014.
14. Cosmological Constraints on Dark Energy from Late Decaying, The Window on the Universe Workshop, Vietnam, August 2013.
15. Bulk Viscosity and Dark Energy, Physics Seminar, Southern Methodist University, USA, October 2010.
16. Dark Energy from Decaying Dark Matter, 33rd Vietnam National Conference on Theoretical Physics, Vietnam, August 2008.
17. Effect Self-Interacting Dark Matter in the galaxies formation, Gunma Observatory, Japan, July 2007.
18. Decaying Dark Matter as Dark Energy, Department of Physics, Chuo University, Japan, July 2007.

19. Late Decaying Dark Matter and Dark Energy: A Unified Approach, Laboratory Annecy on Particle Physics (LAPTH), France, August 2007.
20. Study on Dark Matter and Dark Energy, Astrophysics Seminar, University of Notre Dame, USA, May 2006.
21. Effect of Self-Interacting Dark Matter in the galaxy formation, The 6th Vietnamese National Conference on Physics, Vietnam, July 2005.
22. Dark Matter in the 331 Models, The 9th Asia Pacific Physics Conference, Vietnam, 2004.
23. Self-Interacting dark matter in the 331 models, The 12th UN/ESA (United Nation and European Space Agency) Workshop on Basic Science, China, November 2004.
24. Gauge theory for Self-Interacting dark matter, The 26th Vietnam National Conference on Theoretical Physics , Vietnam, August 2003.