CURRICULUM VITAE THIEM C HOANG

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Research Interests

Cosmic Microwave Background Foreground: Anomalous Microwave Emission and Dust Polarization
Star Formation: Magnetic Fields, Dust Polarization, and Grain Alignment
Computational Astrophysics: Dust Polarization, Dust Acceleration, Radiative Transfer, Inversion Technique
Supernova Ia Polarimetry, Ultrahigh-Energy Cosmic Rays, UV polarimetry

Education

08.2012	**Ph.D.** in Astronomy	University of Wisconsin-Madison, WI, USA
08.2008	**M.S.** in Astronomy	University of Wisconsin-Madison, WI, USA
12.2003	**M.S.** in Theoretical Physics	Hanoi National University of Education, Hanoi, Vietnam
05.2001	**B.S.** in Theoretical Physics	Hanoi National University of Education, Hanoi, Vietnam

Employment

09.2015–present	CITA Postdoctoral Fellow	University of Toronto, Canada
10.2014–08.2015	Humboldt Postdoctoral Fellow	Goethe University Frankfurt, Germany
09.2013–09.2014	Humboldt Postdoctoral Fellow	Ruhr University Bochum, Germany
08.2012–08.2013	CITA Postdoctoral Fellow	University of Toronto, Canada
09.2006–07.2012	Graduate Research Assistant	University of Wisconsin-Madison, USA
07.2005–08.2006	Visiting Scholar	University of Wisconsin-Madison, USA
07.2004–06.2005	Research Assistant	Institute of Astronomy and Astrophysics, Taipei, Taiwan
09.2001–06.2004	Lecturer in Physics	Hanoi National University of Education, Vietnam

Honors & Awards

2013–2015	Alexander von Humboldt Postdoctoral Fellowship	Germany
2015–2017	CITA Postdoctoral Fellowship	Canada
2012–2013	CITA Postdoctoral Fellowship	Canada
2012–2014	Nordita Postdoctoral Fellowship, declined	Sweden
1997–2001	Scholarship of l'Agence Universitaire de la Francophonie (AUF)	Vietnam
1999–2001	Scholarship of Vietnam Ministry of Education and Training	Vietnam
2000–2001	First class honor	Vietnam

Publications

17 first-author and second-author publications in peer-reviewed international journals
3 publications in peer-reviewed international journals as co-author
1 first-author and **1** single-author publications submitted to peer-reviewed international journals
1 book chapter, **2** refereed proceedings
Total citations: **511**; H-index: **13** (according to the NASA/ADS database as of Jan 2016)

Grant History

SOFIA Grant: Co-I, 48,000 USD
Why are carbonaceous grains unaligned in the ISM? - HAWC+ polarimetry of IRC+10216

Conferences & Talks

Invited Talks at International Conferences

07.2016 Upcoming: **Star formation in different environments** — Quy Nhon, Vietnam
On the roles of magnetic fields in star formation via dust polarimetry

05.2016 Upcoming: **Star Formation, magnetic fields, and diffuse matter in the galaxy** — Madison, USA
Studying Magnetic fields with aligned interstellar grains

10.2015 **Magnetic fields in the Universe V** — Corcia, France
Grain alignment by radiative torques

08.2015 **Cosmology-50 years after CMB discovery** — Quy Nhon, Vietnam
Spinning dust emission and polarization spectrum

08.2014 **Aprim 2014** — Daejeon, South Korea
Spinning dust emission and polarization spectrum

08.2013 **Workshop on Anomalous Microwave Emission** — Pasadena, USA
Spinning dust emission and polarization spectrum

02.2013 **Magnetic fields in the Universe IV** — Cancun, Maxico
Predictive theory of grain alignment by radiative torques

08.2011 **Magnetic fields in the Universe III** — Poland
Predictive theory of grain alignment by radiative torques

Invited Colloquia and Seminars

04.2016 Upcoming: **Large scale seminar, ITC, Harvard** — Boston, USA
Polarization of anomalous microwave emission

04.2016 Upcoming: **Astronomy Colloquium, University of Florida** — Florida, USA
Polarization of anomalous microwave emission

03.2016 Upcoming: **Astronomy Colloquium, University of Wisconsin-Madison** — Madison, USA
Polarization of anomalous microwave emission

12.2015 **Seminar, NAOJ** — Mitaka, Japan
Polarization of anomalous microwave emission: Spinning Dust vs. Magnetic Dust

06.2015 **Astronomical Institute Seminar, Ruhr University Bochum** — Bochum, Germany
Spinning dust emission and polarization spectrum

06.2014 **Department Seminar, Institut d'Astrophysique Spatiale** — Orsay, France
Grain alignment of interstellar dust and Polarization

01.2012 **Theoretical Seminar, Department of Physics and Astronomy, Northwestern** — Evanston, USA
Improved model of spinning dust emission

08.2011 **Miniworkshop on MHD turbulence, Cologne University** — Cologne, Germany
Predictive theory of grain alignment by radiative torques

05.2011 **Wunch talk, Department of Astrophysical Sciences** — Princeton, USA
Improved model of spinning dust emission

05.2011 **Lunch talk, Department of Astronomy, UW-Madison** — Madison, USA
Improved model of spinning dust emission

11.2011 **ITC seminar, Harvard** — Boston, USA
Improved model of spinning dust emission

11.2011 **Colloquium, University of Wisconsin-Steven Points** Steven Points, USA
Improved model of spinning dust emission

10.2011 **Seminar, NASA at Goddard Space Flight Center** Goddard, USA
Improved model of spinning dust emission

10.2011 **Seminar, Department of Astronomy, Columbia University** New York, USA
Improved model of spinning dust emission

Contributed Talks at International Conferences

12.2014 **PLANCK 2014 - The microwave sky in temperature and polarization** Ferrara, Italy
Spinning dust emission and polarization spectrum

10.2014 **Cosmic magnetic fields** Krakow, Poland
New method for measuring magnetic fields using UV polarimetry

06.2014 **Astropol 2014** Grenoble, France
New method for measuring magnetic fields using UV polarimetry

05.2014 **Theory and Modeling of Astrophysics Polarization** Prague, Czech Republic
Radiative torque alignment and modeling of dust polarization

04.2013 **47th ESLAB Symposium: The Universe as seen by Planck** Noorwijk, Netherlands
CMB foreground emission from spinning dust

07.2012 **Workshop on Anomalous Microwave Emission** Manchester, UK
Improved model of spinning dust emission

07.2011 **Miniworkshop on Plasma Astrophysics, Ruhr University Bochum** Bochum, Germany
Improved model of spinning dust emission

05.2011 **Understanding Galactic & extragalactic foregrounds** Zadar, Croatia
Improved model of spinning dust emission

Supervised Students

2015–2019 Co-supervising a Ph.D. Student Hanoi National University of Education, Vietnam

2009 Co-supervised an REU Student University of Wisconsin-Madison

Teaching Experience

2002–2004 **Lecturer in Physics** Hanoi National University of Education, Vietnam

During this period, I prepared and gave lectures in atomic physics, optics, and astronomy for undergraduate students majoring in physics. I also taught a course in optics physics for undergraduate students majoring in chemistry and a bilingual course, Physics in French, for high school students in Hanoi for one semester. In addition, I instructed general physic experiments for undergraduate students.

2001–2002 **Assistant Lecturer** Hanoi National University of Education. Vietnam

I hold discussion and problem solving sections in atomic physics, optics for undergraduate students.

Professional Services

2008–present Peer reviewer The Astrophysical Journal

2008–present Peer reviewer Monthly Notices of the Royal Astronomical Society

2015–present Local Organizer Committee Star formation in different environments Conference, Vietnam

2010 Co-organizer Midwest Magnetic Fields Workshop

Outreach Activities

2006–2012 Public observing nights University of Wisconsin-Madison

2002–2004 Undergraduate observing nights Hanoi National University of Education

Computer Skills

Programming languages: Fortran 77/90, C, MPICH2, and Python
Software packages: Interactive Data Language (IDL), Mathematica
Operating systems: Mac OS X, Linux

Languages

Vietnamese (mother tongue), **English** (fluent), **French** (working knowledge)

Press Releases

http://www.news.wisc.edu/22159
http://www.usra.edu/news/pr/2013/dust

Publication List

Refereed Publications as First- and Second-author

18. **Hoang, T.**, Lazarian, A., 2016, "Polarization of magnetic dipole emission from magnetic nanoparticles," ApJ, accepted
http://adsabs.harvard.edu/abs/2015arXiv151103691H

17. **Hoang, T.**, Lazarian, A., & Schlickeiser, R., 2015, "Acceleration and Destruction of Relativistic Dust in Radiation and Its Implication for Ultrahigh Energy Cosmic Rays," ApJ, 804, 1
http://adsabs.harvard.edu/abs/2015ApJ...806..255H

16. **Hoang, T.**, Lazarian, A., & Andersson, B-G., 2015, "Modeling grain alignment by RATs and polarization for reflection nebula," MNRAS, 448, 1178–1198
http://adsabs.harvard.edu/abs/2015MNRAS.448.1178H

15. **Hoang, T.**, Lazarian, A., & Martin, P. G. 2014, "Alignment of small grains by resonance paramagnetic relaxation and constraining magnetic fields," ApJ, 764, 1
http://adsabs.harvard.edu/abs/2014ApJ...790....6H

14. **Hoang, T.**, & Lazarian, A. 2014, "Grain alignment in special environment conditions," MNRAS, 438, 680
http://adsabs.harvard.edu/abs/2014MNRAS.438..680H

13. **Hoang, T.**, Lazarian, A., & Martin, P. G. 2013, "Constraints on polarization of electric dipole emission from spinning dust emission," ApJ, 779, 152
http://adsabs.harvard.edu/abs/2013ApJ...779..152H

12. **Hoang, T.**, & Lazarian, A. 2012, "Acceleration of Small Dust Grains due to Random Charge Fluctuations," ApJ, 761, 96
http://adsabs.harvard.edu/abs/2012ApJ...761...96H

11. **Hoang, T.**, Lazarian, A., & Schlickeiser, R. 2012, "Revisiting Acceleration of Charged Grains in MHD Turbulence," ApJ, 747, 54
http://adsabs.harvard.edu/abs/2012ApJ...747...54H

10. **Hoang, T.**, & Lazarian, A. 2012, "Spinning Dust Emission from Wobbling Grains: Important Physical Effects and Implications," 2012, 44, *Advances in Astronomy*
http://adsabs.harvard.edu/abs/2012AdAst2012E..44H

9. **Hoang, T.**, Lazarian, A., & Draine, B. T. 2011, "Spinning Dust Emission: Effects of Irregular Grain Shape, Transient Heating and Comparison to WMAP data," ApJ, 741, 87
http://adsabs.harvard.edu/abs/2011ApJ...741...87H

8. **Hoang, T.**, Draine, B. T., & Lazarian, A. 2010, "Improving the Model of Spinning Dust Emission: Effects of Grain Wobbling and Transient Spin-up," ApJ, 715, 1462
http://adsabs.harvard.edu/abs/2010ApJ...715.1462H

7. **Hoang, T.**, & Lazarian, A. 2009b, "Alignment of Dust Grains: Effects of Internal Relaxation of Energy and Complex Radiation Fields," ApJ, 697, 1316
http://adsabs.harvard.edu/abs/2009ApJ...697.1316H

6. **Hoang, T.**, & Lazarian, A. 2009a, "Radiative Torques Alignment: Thermal Flipping and Effects of Pinwheel Torques," ApJ, 695, 1457
http://adsabs.harvard.edu/abs/2009ApJ...695.1457H

5. **Hoang, T.**, & Lazarian, A. 2008, "Radiative Torques Alignment: Essential Physical Processes," MNRAS, 388, 117
http://adsabs.harvard.edu/abs/2008MNRAS.388..117H

4. Lazarian, A., & **Hoang, T.** 2008, "Alignment of Dust with Magnetic Inclusions: Radiative Torques and Superparamagnetic Barnett and Nuclear Relaxation," ApJ, 676, L25
http://adsabs.harvard.edu/abs/2008ApJ...676L..25L

3. Lazarian, A., & **Hoang, T.** 2007b, "Subsonic Mechanical Alignment of Irregular Grains," ApJ, 669, L77
http://adsabs.harvard.edu/abs/2007ApJ...669L..77L

2. Lazarian, A., & **Hoang, T.** 2007a, "Radiative Torques: Analytical Model and Basic Properties," MNRAS, 378, 910
http://adsabs.harvard.edu/abs/2007MNRAS.378..910L

1. Chiu, P-J, **Hoang, C-T**, Dinh-V-Trung, et al. 2006, "A Slowly Expanding Disk and Fast Bipolar Flows from the S Star Pi Gruis," ApJ, 645, 605
http://adsabs.harvard.edu/abs/2006ApJ...645..605C

Refereed Publications as Co-author

3. Andersson, B.-G., Piirola, V., De Buizer, J., Clemens, D. P., Uomoto, A., Charcos-Llorens, M., Geballe, T. R., Lazarian, A., **Hoang, T.**, & Vornanen, T. 2013, "Evidence for H_2 formation driven dust grain alignment in IC 63", ApJ, 775, 2
http://adsabs.harvard.edu/abs/2013ApJ...775...84A

2. Ivlev, A., Lazarian, A., Tsytovich, V. N., de Angelis, U., **Hoang, T.**, & Morfill, G. E. 2010, "Acceleration of Small Dust Grains due to Charge Fluctuations," ApJ, 723, 612
http://adsabs.harvard.edu/abs/2010ApJ...723..612I

1. Whittet, D., Hough, J. H., Lazarian, A., & **Hoang, T.** 2008, "The Efficiency of Grain Alignment in Dense Interstellar Clouds: A Reassessment of Constraints from Near Infrared Polarization," ApJ, 674, 304
http://adsabs.harvard.edu/abs/2008ApJ...674..304W

Submitted Publications

1. **Hoang, T.** 2015, "Properties and alignment of interstellar dust grains toward SNe Ia with anomalous polarization curves," MNRAS, submitted
http://adsabs.harvard.edu/abs/2015arXiv151001822H

Papers in Preparation

3. **Hoang, T.**, & Lazarian, A. 2016, "Unified model of RAT alignment for enhanced magnetic susceptibility," ApJ, to be submitted

2. **Hoang, T.**, Lazarian, A., & Chepurnov, A. 2016, "Simulations of polarized dust emission by RATs for molecular clouds with embedded stars," ApJ, to be submitted

1. **Hoang, T.**, Lazarian, A., & Cho, J. 2016, "Mechanical Alignment of irregular grains with superparamagnetic inclusions," ApJ, to be submitted

Conference Proceedings

3. Hoang, T., 2015, ”Anomalous Microwave Emission from Spinning Dust and its Polarization Spectrum”, proceeding for Cosmology: 50 years after CMB discovery
   http://adsabs.harvard.edu/abs/2015arXiv151105997H

2. Hoang, T., & Lazarian, A. 2012, “Mapping Magnetic Fields through Aligned Dust Grains,” proceeding for Magnetic fields in the universe III

1. Lazarian, A., & **Hoang, T.** 2011, “Alignment of Dust by Radiative Torque: Recent Developments,” *ASPC*, 449, 116
   http://adsabs.harvard.edu/abs/2011ASPC..449..116L

Selected Posters

4. **Hoang, T.**, Draine, B. T., & Lazarian, A. “Improved Model of Spinning Dust Emission: Effect of Wobbling and Transient Spin-up,” American Astronomical Society Meeting, Jan 2010

3. **Hoang, T.**, & Lazarian, A. “Alignment of Dust Grains by Radiative Torques: Effects of Thermal Flipping and Pinwheel Torques,” American Astronomical Society Meeting, Jan 2009

2. **Hoang, T.**, & Lazarian, A. “Alignment of Dust Grains by Radiative Torques: Essential Physical Processes and Grain Alignment,” American Astronomical Society Meeting, Jan 2008

1. **Hoang, T.**, Lazarian, A., Yan, H., & Nordsieck, K. “Diagnostics of Magnetic Fields in Interstellar Diffuse Medium via Aligned Dust Grains and Atoms, ” American Astronomical Society Meeting, Dec 2006

Book Chapters

1. Lazarian, A., Andersson, B-G, & **Hoang, T.** 2015, “Grain Alignment: Role of Radiative Torques and Paramagnetic Relaxation,” in *Polarimetry of stars and planetary systems*, eds. L. Kolokolova, J. Hough, & A.-Ch. Levasseur-Regourd (New York: Cambridge Univ. Press)
   http://adsabs.harvard.edu/abs/2015arXiv151103696L