

Curriculum Vitae

Niayesh Afshordi

December 1, 2011

• Contact Information

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• Citizenship

Iran (US Permanent Resident)

• Current Positions

1. Assistant Professor

Department of Physics and Astronomy, University of Waterloo, Waterloo, 2009-

2. Associate Faculty

Cosmology and Gravitation, Perimeter Institute for Theoretical Physics, Waterloo, 2009-

• Employment History

6. Distinguished Research Fellow

Perimeter Institute for Theoretical Physics, Waterloo, 2007-2009

5. Institute for Theory and Computation (ITC) Postdoctoral Fellow

Harvard-Smithsonian Center for Astrophysics, Harvard University, Cambridge, 2004-2007

4. Graduate Student Instructor and Researcher

Department of Astrophysical Sciences, Princeton University, Princeton, 2000-2004

3. Graduate Student Teaching Assistant

Physics Department, Brown University, Providence, 1999-2000

2. **Research Associate**

Institute for theoretical studies in Physics and Mathematics (IPM), Tehran, Iran, 1998-1999

1. **Instructor**

Iranian National Physics Olympiad Camp, Tehran, Iran, 1996-1998

• **Education**

5. **Princeton University, Princeton 2000-2004**

PhD in Astrophysics: *The Other 99 Percent*
November 2004, (Thesis Advisor: David N. Spergel)

4. **Brown University, Providence 1999-2000**

3. **Sharif University of Technology, Tehran, Iran 1996-1999**

BA in Physics – 2nd in class, 1999

2. **Iranian National Physics Olympiad Camp, Tehran, Iran 1995-1996**

1. **Allameh Helli High School, Tehran, Iran 1992-1995**

• **Awards**

8. **Early Researcher Award**, Ministry of Research and Innovation, Province of Ontario, Canada, 2011

7. **Professor M. K. Vainu Bappu Gold Medal 2008**, Astronomical Society of India, 2011 (jointly with Nissim Kanekar)

6. **Discovery Accelerator Supplement**, Natural Sciences and Engineering Research Council of Canada (NSERC), 2010 (8 awarded across Canada in Physics)

5. **Distinguished Research Fellowship**, Perimeter Institute for Theoretical Physics, Waterloo, Canada 2008

4. **1st place, National Collegiate Physics Olympiad (1st stage)**, Iran, 1999

3. **IPM Undergraduate Fellowship**, Institute for studies in theoretical Physics and Mathematics (IPM), Iran, 1997

2. **Silver Medal, 27th International Physics Olympiad**, Oslo, Norway, 1996

1. **Gold Medal, 8th National Physics Olympiad**, Tehran, Iran, 1995

• **External Research Funding**

3. **Early Researcher Award: “Astrophysical Windows into Fundamental Physics”**, Ministry of Research and Innovation (MRI), Province of Ontario, Canada, 150’000\$, 2011-2016
2. **Discovery Accelerator Supplement**, Natural Sciences and Engineering Research Council of Canada (NSERC), 120’000\$, 2010-2013 (8 awarded across Canada in Physics)
1. **Discovery Grant: “Astrophysical Windows into Fundamental Physics”**, Natural Sciences and Engineering Research Council of Canada (NSERC), 260’000\$, 2010-2015 (ranked within the top 17% of Discovery Grant applications in Physics)

• Teaching

8. Guelph-Waterloo Physics Institute

- Instructor, Physics 703, Introduction to Quantum Field Theory (Fall 11)
- Instructor, Astrophysics and Cosmology through Problems (with M. Wyman; Fall 08)

7. University of Waterloo

- Instructor, Physics 275, Solar System Physics (Spring 10, 11)
- Guest Lecturer, Physics 10: Undergraduate Seminar Series (Prof. M. Balogh; Winter 08)

6. Perimeter Scholar International (PSI)

- Instructor, Cosmology Review (with H. Peiris and P. Singh; Fall 09)

5. Harvard University

- Guest Lecturer, Astronomy 145: Topics in Astrophysics (Prof. A. Loeb; Spring 07)

4. Princeton University

- Assistant in Instruction, Astrophysics 301: Gravitational Astronomy: Newton to Einstein (Prof. R. Gott; Fall 01)
- Assistant in Instruction, Astrophysics 204: Topics in Modern Astronomy (Profs. J. Gunn and J. Knapp; Spring 02)

3. Brown University

- Teaching Assistant, Physics 24: Introduction to Astronomy (Prof. G. Tucker; Fall 99)
- Teaching Assistant, Physics 4: Introduction to Physics (Prof. R. Partridge; Spring 00)

2. Sharif University, Tehran, Iran

- Instructor, Introductory Electrodynamics (Informal; Spring 97)
- Teaching Assistant, Quantum Mechanics I&II (Prof. V. Karimipour; Fall 98 and Spring 99)

1. National Physics Olympiad Camp, Tehran, Iran

- Organized precepts and exams. (1996-1998).

• Student Supervision

– Doctoral Students

10. **Elizabeth Gould**, Perimeter Institute and University of Waterloo, 2011-2014
9. **Mehdi Saravani**, Perimeter Institute and University of Waterloo, 2011-2014
8. **Yosdanis Vazquez Ponce**, Perimeter Institute and University of Waterloo, 2011-2014
7. **Farbod Kamiab**, University of Waterloo, 2011-2014
6. **Siavash Aslanbeigi**, Perimeter Institute and University of Waterloo, 2010-2013
5. **Chanda Prescod-Weinstein**, Perimeter Institute and University of Waterloo (now a postdoctoral fellow at MIT), 2008-2010
co-supervisor: Lee Smolin (Perimeter Institute)
4. **Razieh Pourhasan**, University of Waterloo, 2011-2014
primary supervisor: Robert Mann (University of Waterloo)
3. **Shant Baghran**, Sharif University (now a postdoctoral fellow at U-Waterloo), 2010
primary supervisor: Sohrab Rahvar (Sharif University)
2. **Marilena LoVerde**, Columbia University (now a postdoctoral fellow at IAS, Princeton), 2007-2008
primary supervisor: Lam Hui (Columbia University)
1. **Georg Robbers**, Heidelberg University (now a postdoctoral fellow at Max Planck Inst. for Astrophysics) 2007
primary supervisor: Christof Wetterich (Heidelberg)

– Masters Students

3. **Yasaman K. Yazdi**, University of Waterloo, 2011-2013
2. **Abhineet Agarwal**, University of Waterloo, 2010-2012

1. **Yosdanis Vazquez Ponce**, Perimeter Scholar International, 2010

– **Undergraduate Students**

2. **Luke Bovard**, University of Waterloo, 2010-
co-supervisor: Robert Mann (Waterloo)
1. **Matthias Mueller**, Ulm University, 2008-2009
co-supervisor: Mike Hudson (Waterloo)

• **Postdoctoral Mentorship**

6. **Shant Baghram**, University of Waterloo, 2011-2013
5. **Guilhem Lavaux**, CITA national fellow (hosted at the U-Waterloo), 2011-2014
co-mentor: Mike Hudson (Waterloo)
4. **Jesus F. Zavala**, CITA national fellow (hosted at the U-Waterloo), 2010-2013
co-mentor: Michael Balogh (Waterloo)
3. **Matthew Johnson**, Perimeter Institute, 2010-2015
2. **Sarah Shandera**, Perimeter Institute, 2009-2011 (now assistant professor at Penn-State university)
1. **Adrienne Erickcek**, Perimeter Institute and Canadian Institute for Theoretical Astrophysics, 2009-2014

• **Organized Meetings/Workshops**

11. **Conformal Nature of the Universe** (May 9-12, 2012; Perimeter Institute)
 - with Tim Koslowski, Lee Smolin (Perimeter Institute), Julian Barbour (College Farm), and Sean Gryb (Utrecht)
10. **Unraveling Dark Matter** (September 22-24, 2011; Perimeter Institute)
 - with Joseph Pradler (Perimeter Institute), Jesus Franco Zavala (U-Waterloo), and Kris Sigurdson (UBC)
9. **Cosmological Frontiers of Fundamental Physics** (June 15-18, 2010; Perimeter Institute)
 - with Andrew Tolley, Latham Boyle, Rob Myers, Neil Turok, Adrienne Erickcek (Perimeter Institute), Ben Craps (Solvay), and Thomas Hertog (APC)
8. **New Prospects for Solving the Cosmological Constant Problem** (May 25-27, 2009; Perimeter Institute)

- with Claudia de Rham, Ghazal Geshnizjani (Perimeter Institute), and Georgi Dvali (CERN/NYU)
- 7. **Sunyaev-Zel’dovich Universe and the Future of Cluster Cosmology** (April 27-May 1, 2009; Perimeter Institute)
 - with Michael Balogh (U-Waterloo), Gil Holder (McGill), and Lyman Page (Princeton)
- 6. **Young Researchers Conference** (December 8-12, 2008; Perimeter Institute)
 - as part of the *Perimeter Institute postdoctoral search committee*
- 5. **PI/CITA cosmology mini-workshop** (October 23, 2008; Perimeter Institute)
 - with Brice Menard (CITA)
- 4. **Cosmology seminar chair** (2008-2009 academic year; Perimeter Institute)
- 3. **Small Scale Structure of Dark Matter** (June 7-8, 2008; Perimeter Institute)
 - with James E. Taylor (U-Waterloo)
- 2. **Origins and Observations of Primordial Non-Gaussianity** (March 8-10, 2008; Perimeter Institute)
 - with Justin Khoury (Perimeter Institute) and Ben Wandelt (U-Illinois at Urbana-Champaign)
- 1. **Peyton Hall Wednesday Lunch (Wunch) scientific talks** (2002-2003 academic year; Princeton University)
 - founder and organizer

- **Refereed Articles for:**

Astrophysical Journal (ApJ), Gamma, Foundations of Physics (FOOP), Journal of Cosmology and Astroparticle Physics (JCAP), Journal of High Energy Physics (JHEP), Monthly Notices of Royal Astronomical Society (MNRAS), Physics Letters B (PLB), Physical Review D (PRD), Physical Review E (PRE), and Physical Review Letters (PRL)

- **Refereed Publications**

- 33. **“Chameleon Gravity, Electrostatics, and Kinematics in the Outer Galaxy”**
R. Pourhasan, N.A., R. B. Mann, and A. C. Davis.
JCAP, *in press* [arXiv:1109.0538 [astro-ph.CO]] HEP entry

32. **“Phenomenology of Gravitational Aether as a solution to the Old Cosmological Constant Problem”**
S. Aslanbeigi, G. Robbers, B. Z. Foster, K. Kohri, and *N.A.*
Phys. Rev. D, *in press* [arXiv:1106.3955 [astro-ph.CO]] HEP entry
31. **“Neutron Stars and the Cosmological Constant Problem”**
F. Kamiab, and *N.A.*
arXiv:1104.5704 [astro-ph.CO]
Phys. Rev. **D84**, 063011 (2011) HEP entry
30. **“Prospects for Detecting Dark Matter Halo Substructure with Pulsar Timing”**
S. Baghram, *N.A.*, and K. M. Zurek.
Phys. Rev. D **84**, 043511 (2011) [arXiv:1101.5487 [astro-ph.CO]] HEP entry
29. **“A Theory of a Spot”**
N.A., A. Slosar, and Y. Wang.
arXiv:1006.5021 [astro-ph.CO]
JCAP **1101**, 019 (2011) HEP entry
28. **“Reviving Gravity’s Aether in Einstein’s Universe”**
N.A.
Physics in Canada **66.2** (2010) [arXiv:1004.2901 [physics.pop-ph]] SPIRES entry
27. **“Hierarchy in the Phase Space and Dark Matter Astronomy”**
N.A., R. Mohayaee and E. Bertschinger
Phys. Rev. D **81**, 101301 (2010) [arXiv:0911.0414 [astro-ph.CO]] SPIRES entry
26. **“Cuscuton and low energy limit of Horava-Lifshitz gravity”**
N.A.
Phys. Rev. D **80**, 081502 (2009) [arXiv:0907.5201 [hep-th]] SPIRES entry
25. **“Stellar Black Holes and the Origin of Cosmic Acceleration”**
C. Prescod-Weinstein, *N.A.*, and M. L. Balogh
Phys. Rev. D **80**, 043513 (2009) [arXiv:0905.3551 [astro-ph.CO]] SPIRES entry
24. **“Do observations offer evidence for cosmological-scale extra dimensions?”**
N.A., G. Geshnizjani and J. Khoury
JCAP **0908**, 030 (2009) [arXiv:0812.2244 [astro-ph]] SPIRES entry
23. **“Hierarchical Phase Space Structure of Dark Matter Haloes: Tidal debris, Caustics, and Dark Matter annihilation”**
N.A., R. Mohayaee and E. Bertschinger
Phys. Rev. D **79**, 083526 (2009) [arXiv:0811.1582 [astro-ph]] SPIRES entry

22. **“Extended Limber Approximation”**
M. LoVerde and *N.A.*
Phys. Rev. D **78**, 123506 (2008) [arXiv:0809.5112 [astro-ph]] SPIRES entry
21. **“Primordial non-gaussianity, statistics of collapsed objects, and the Integrated Sachs-Wolfe effect”**
N.A. and A. J. Tolley
Phys. Rev. D **78**, 123507 (2008) [arXiv:0806.1046 [astro-ph]] SPIRES entry
20. **“Fundamental Plane of Sunyaev-Zeldovich clusters”**
N.A.
Astrophys. J. **686**, 201 (2008) [arXiv:0704.2416 [astro-ph]] SPIRES entry
19. **“Does Planck mass run on the cosmological horizon scale?”**
G. Robbers, *N.A.* and M. Doran
Phys. Rev. Lett. **100**, 111101 (2008) [arXiv:0708.3235 [astro-ph]] SPIRES entry
18. **“Cuscuton Cosmology: Dark Energy meets Modified Gravity”**
N.A., D. J. H. Chung, M. Doran and G. Geshnizjani
Phys. Rev. D **75**, 123509 (2007) [arXiv:astro-ph/0702002] SPIRES entry
17. **“Missing Thermal Energy of the Intracluster Medium”**
N.A., Y. T. Lin, D. Nagai and A. J. R. Sanderson
Mon. Not. Roy. Astron. Soc. **378**, 293 (2007) [arXiv:astro-ph/0612700] SPIRES entry
16. **“How well can (renormalized) perturbation theory predict dark matter clustering properties?”**
N.A.
Phys. Rev. D **75**, 021302 (2007) [arXiv:astro-ph/0610336] SPIRES entry
15. **“Cuscuton: A Causal Field Theory with an Infinite Speed of Sound”**
N.A., D. J. H. Chung and G. Geshnizjani
Phys. Rev. D **75**, 083513 (2007) [arXiv:hep-th/0609150] SPIRES entry
14. **“On the stability of dark energy with mass-varying neutrinos”**
N.A., M. Zaldarriaga and K. Kohri
Phys. Rev. D **72**, 065024 (2005) [arXiv:astro-ph/0506663] SPIRES entry
13. **“Do large-scale inhomogeneities explain away dark energy?”**
G. Geshnizjani, D. J. H. Chung and *N.A.*
Phys. Rev. D **72**, 023517 (2005) [arXiv:astro-ph/0503553] SPIRES entry
12. **“CMB B-mode polarization from Thomson scattering in the local universe”**

- C. M. Hirata, A. Loeb and *N.A.*
Phys. Rev. D **71**, 063531 (2005) [arXiv:astro-ph/0501167] SPIRES entry
11. **“Bypass to Turbulence in Hydrodynamic Accretion: Lagrangian Analysis of Energy Growth”**
N.A., B. Mukhopadhyay and R. Narayan
Astrophys. J. **629**, 373 (2005) [arXiv:astro-ph/0412194] SPIRES entry
 10. **“Bypass to Turbulence in Hydrodynamic Accretion Disks: An Eigenvalue Analysis”**
B. Mukhopadhyay, *N.A.* and R. Narayan
Astrophys. J. **629**, 383 (2005) [arXiv:astro-ph/0412193] SPIRES entry
 9. **“WMAP constraints on the Intra-Cluster Medium”**
N.A., Y. T. Lin, and A. J. .R. Sanderson
Astrophys. J. **629**, 1 (2005) [arXiv:astro-ph/0408560] SPIRES entry
 8. **“Coarse-grained back reaction in single scalar field driven inflation”**
G. Geshnizjani and *N.A.*
JCAP **0501**, 011 (2005) [arXiv:gr-qc/0405117] SPIRES entry
 7. **“Integrated Sachs-Wolfe effect in Cross-Correlation: The Observer’s Manual”**
N.A.
Phys. Rev. D **70**, 083536 (2004) [arXiv:astro-ph/0401166] SPIRES entry
 6. **“Cross-Correlation of the Cosmic Microwave Background with the 2MASS Galaxy Survey: Signatures of Dark Energy, Hot Gas, and Point Sources”**
N.A., Y. S. Loh and M. A. Strauss
Phys. Rev. D **69**, 083524 (2004) [arXiv:astro-ph/0308260] SPIRES entry
 5. **“Primordial Black Holes as Dark Matter: The Power Spectrum and Evaporation of Early Structures”**
N.A., P. McDonald and D. N. Spergel
Astrophys. J. **594**, L71 (2003) [arXiv:astro-ph/0302035] SPIRES entry
 4. **“Geometrically Thin Disk Accreting Into a Black Hole”**
N.A. and B. Paczynski
Astrophys. J. **592**, 354 (2003) [arXiv:astro-ph/0202409] ADS entry
 3. **“Mass-Temperature Relation of Galaxy Clusters: A Theoretical Study”**
N.A. and R. Cen
Astrophys. J. **564**, 669 (2002) [arXiv:astro-ph/0105020] SPIRES entry
 2. **“Super-Hubble nonlinear perturbations during inflation”**

N.A. and R. H. Brandenberger

Phys. Rev. D **63**, 123505 (2001) [arXiv:gr-qc/0011075] SPIRES entry

1. **“A Dynamical Approach to a Self-similar Universe”**

E. Abdalla, *N.A.*, K. Khodjasteh and R. Mohayaee

Astron. Astrophys. **345**, 22 (1999) [arXiv:astro-ph/9803187] SPIRES entry

• **Submitted Manuscripts**

1. **“The Non-Gaussian Sting in Posteriors arising from Marginal Detections”**

B. A. Bassett and *N.A.*

(submitted to Astrophys. J. Letters)

arXiv:1005.1664 [astro-ph.CO] SPIRES entry

• **Conference Proceedings**

3. **“Intracluster Medium through three years of WMAP”**

N.A.

New Astron. Rev. **50**, 905 (2006)

Prepared for Workshop on Fundamental Physics with Cosmic Microwave Background Radiation, Irvine, California, 23-25 Mar 2006 [arXiv:astro-ph/0608503] SPIRES entry

2. **“Growth of Hydrodynamic Perturbations in Accretion Disks: Possible Route to Non-Magnetic Turbulence”**

B. Mukhopadhyay, *N.A.* and R. Narayan

In the Proceedings of COSPAR Colloquium on Spectra and Timing of Accreting X-ray Binaries, Mumbai, India, 17-21 Jan 2005

arXiv:astro-ph/0507046 SPIRES entry

1. **“Hydrodynamic Turbulence in Accretion Disks”**

B. Mukhopadhyay, *N.A.* and R. Narayan

In the Proceedings of 22nd Texas Symposium on Relativistic Astrophysics at Stanford University, Stanford, California, 13-17 Dec 2004, pp 1609 [arXiv:astro-ph/0501468]

TSRA-2004-1609(2005) SPIRES entry

• **Other Preprints**

8. **“Using Dark Matter Haloes to Learn about Cosmic Acceleration: A New Proposal for a Universal Mass Function”**
C. Prescod-Weinstein and *N.A.*
arXiv:1010.5501 [astro-ph.CO] SPIRES entry
 7. **“Dark Energy, Black Hole Entropy, and the First Precision Measurement in Quantum Gravity”**
N.A.
arXiv:1003.4811 [hep-th] SPIRES entry
 6. **“The case for a directional dark matter detector and the status of current experimental efforts”**
S. Ahlen et al.
Int. J. Mod. Phys. A **25**, 1 (2010) [arXiv:0911.0323 [astro-ph.CO]] SPIRES entry
 5. **“Gravitational Aether and the thermodynamic solution to the cosmological constant problem”**
N.A.
arXiv:0807.2639 [astro-ph] SPIRES entry
 4. **“Non-Gaussianity as a Probe of the Physics of the Primordial Universe and the Astrophysics of the Low Redshift Universe”**
E. Komatsu et al.
Science White Paper submitted to the Cosmology and Fundamental Physics (CFP) Science Frontier Panel of the Astro 2010 Decadal Survey
arXiv:0902.4759 [astro-ph.CO] SPIRES entry
 3. **“A Recent Gamma Ray Burst in the Heart of Milky Way”**
A.E. Broderick, D. Finkbeiner, *N.A.* and G. Dobler (2007)
 2. **“Physical Evidence for Dark Energy”**
R. Scranton, A. J. Connolly, R. C. Nichol, A. Stebbins, I. Szapudi, D. J. Eisenstein, *N.A.* and [SDSS Collaboration]
arXiv:astro-ph/0307335
FERMILAB-PUB-03-252-A(2003) SPIRES entry
 1. **“Cyclotron Emission and Thermalization of the CMB Spectrum”**
N.A.
arXiv:astro-ph/0202082 SPIRES entry
- **Selected Invited Colloquia, Seminars, and Summer School Lectures**

30. **“Where will Einstein fail? Insights into Gravity and Dark Energy”**
 - Vainu Bappu Memorial Gold Medal award ceremony, IUCAA, Pune, India (Oct. 2011)
 - KICP Colloquium, University of Chicago (Oct. 2011)
 - Invited Seminar, Canadian Institute for Theoretical Physics (CITA), University of Toronto (Sep. 2011)
29. **“Aether, Quantum Gravity and Cosmology”**
 - Invited Contribution, Cosmological Frontiers in Fundamental Physics, APC, Paris (Jun. 2011)
28. **“Fine Structure of Dark Matter Phase Space”**
 - Invited Contribution, Dark Matter: Its Origin, Models, and Detection, University of New Mexico (May 2011)
27. **“Aether, Quantum Gravity, and Cosmology”**
 - Invited Contribution, Philosophy of Cosmology, University of Western Ontario (May 2011)
26. **“How can astrophysical compact objects shed light on dark cosmology?”**
 - Invited High Energy Theory Seminar, University of Amsterdam (Apr. 2011)
25. **“Largest and Smallest Dark Matter Clusters, and what we can learn from them”**
 - Invited High Energy Theory Seminar, University of Michigan, Ann Arbor (Jan. 2011)
24. **“Cosmology and the End of Physics!”**
 - Invited Colloquium, Physics Department, Guelph University (Oct. 2010)
23. **“First Precision Measurement in Quantum Gravity”**
 - Invited Seminar, Institute for Research in Fundamental Sciences (IPM), Tehran (Aug. 2010)
22. **“Non-linear Structure Formation in Cosmology”**
 - Invited Lectures, Institute for Research in Fundamental Sciences (IPM), Tehran (Aug. 2010)
21. **“Cosmological constant problem: rethinking quantum and gravity”**
 - Invited Contribution, Laws of Nature: Their Nature and Knowability, Perimeter Institute (May 2010)
20. **“Hierarchy in the Phase Space and Dark Matter Astronomy”**
 - Astrophysics seminar, Queen’s University, Kingston, ON (Mar. 2010)

19. **“Stellar Black Holes and the Thermodynamic Origin of Cosmic Acceleration”**
-Invited Colloquium, Institut d’Astrophysique de Paris (Feb. 2010)
18. **“Cuscuton and solving the cosmological constant problem”**
-High Energy Physics seminar, Physics department, Vanderbilt University (Oct. 2009)
17. **“Stellar Black Holes and the origin of cosmic acceleration”**
-Cosmology seminar, KIPAC, Stanford University, (Sep. 2009)
-Theory Canada 5, Fredericton, NB (Jun. 2009)
16. **“Hierarchy in the Phase Space and Dark Matter Astronomy”**
-CYGNUS 2009 workshop on directional dark matter detection, MIT, Cambridge, MA (Jun. 2009)
15. **“The End of the Cosmological Constant Problem”**
-Invited Contribution, Interactions in the Dark Sector, Astrophysics Workshop, Lorentz Center, Leiden, Netherlands (Apr. 2009)
-Cosmology Seminar, IPMU, Kashiwa, Japan (Feb. 2009)
14. **“Missing Thermal energy of the Universe”**
Invited Contribution, Open questions from clusters of galaxies, OMP, Toulouse, France (Jun. 2008)
13. **“Galaxy Clusters as Cosmic Canaries”**
High Energy Physics seminar, Syracuse University (Mar. 2008)
12. **“Physics beyond the Horizon”**
Physics Colloquium, University of Pennsylvania (Feb. 2008)
11. **“Our Tumultuous Journey into the Dark Side”**
Physics Colloquium, York University (Nov. 2007)
10. **“WMAP-inspired Cosmology”**
Gravity Group Seminar, Princeton University (Apr. 2007)
9. **“Missing Thermal Energy of the Universe”**
Invited Contribution, Outstanding Questions in Cosmology, Imperial College, London, UK (Mar. 2007)
8. **“Life on the Dark Side”**
Physics Colloquium, University of Pittsburgh (Jan. 2007)
7. **“Galaxy Clusters as Cosmic Canaries”**
Astronomy Colloquium, Penn-State University (Dec. 2006)

6. **“Missing Thermal Energy of the Universe”**
Invited Contribution, Great Lakes Cosmology Meeting, Perimeter Institute, Waterloo, ON (Nov. 2006)
5. **“Cuscuton Cosmology: Dark Energy meets Modified Gravity”**
Invited Contribution, COSMO 06, Tahoe City, CA (Sep. 2006)
4. **“Digging for new (Astro-) Physics in the old CMB”**
KICP seminar, Astronomy Department, University of Chicago, IL (Jun. 2006)
3. **“Alternative Windows into the Nature of Dark Matter”**
ISCAP Seminar, Physics Department, Columbia University (Feb. 2006)
2. **“Large Scale Structure of the Universe and CMB Secondary Anisotropies”**
Invited Lectures, 2nd IPM summer school on Cosmology, Qeshm Island, IRAN (Jan 2005)
1. **“Cross-Correlating Cosmic Microwave Background with the Large-Scale Structure of the Universe”**
Astronomy Colloquium, Princeton University (Mar. 2004)