

Kevork Abazajian

Curriculum Vitae

PRESENT ADDRESS

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PERSONAL INFORMATION

Date of Birth: 11 June 1974
Citizenship: US

RESEARCH POSITIONS

2003 - PRESENT	<i>Director's Postdoctoral Fellow</i> Theoretical Physics Division, Astrophysics and Particle Physics Los Alamos National Laboratory
2001 - 2003	<i>Research Associate</i> NASA/Fermilab Theoretical Astrophysics Group Fermi National Accelerator Laboratory <i>Associate Fellow</i> Center for Cosmological Physics, University of Chicago
1997 - 2001	Graduate Research Assistant George M. Fuller, University of California, San Diego

EDUCATION

2001	Ph.D. Physics, University of California, San Diego Thesis: <i>Neutrino Cosmology and Astrophysics</i> Advisor: George M. Fuller
1997	M.S. Physics, University of California, San Diego
1996	B.S. Physics, University of Houston Honors College Magna Cum Laude Minors: Mathematics and Philosophy

ACADEMIC HONORS

NASA Graduate Student Research Program Fellowship, 1999-2001
Distinguished Senior Honors Thesis, University of Houston Honors College
National Merit Scholar, University of Houston Honors College
Moody Scholar, University of Houston Honors College

PROFESSIONAL ACTIVITIES

Referee for Physical Review Letters, Physical Review D, Physics Letters B
Organizer, *Workshop on Neutrino News from the Lab and the Cosmos*, Fermilab, Oct. 2002
Organizer, Theoretical Astrophysics Group Seminars at Fermilab, Spring 2002
Volunteer for Fermilab Saturday Morning Physics program for high-school students

TEACHING EXPERIENCE

UNIVERSITY OF CALIFORNIA, SAN DIEGO - Teaching Assistant
Physics 2D, Modern Physics (undergraduate), Winter 2001
Physics 212A, 212B, Quantum Mechanics (graduate), Fall 1998 - Winter 1999
Physics 5, Introductory Astronomy (undergraduate), Spring 1998
Physics 7, The Universe (undergraduate), Winter 1998
Physics 4B, Thermal Physics and Optics (undergraduate), Spring 1997
Physics 2CL, Introductory Physics Lab (undergraduate), Fall 1996 - Winter 1997
THE PRINCETON REVIEW - *Hyperlearning* Instructor for MCAT Physics, 2000-2001

PUBLICATIONS

1. **“Cosmological parameters from SDSS and WMAP”**
M. Tegmark *et al.* [SDSS Collaboration]
arXiv:astro-ph/0310723 [SPIRES entry](#)
2. **“The First Data Release of the Sloan Digital Sky Survey”**
K. Abazajian *et al.* [SDSS Collaboration]
Astron. J. **126**, 2081 (2003) [arXiv:astro-ph/0305492] [SPIRES entry](#)
3. **“Neutrino mass and dark energy from weak lensing”**
K. N. Abazajian and S. Dodelson
Phys. Rev. Lett. **91**, 041301 (2003) [arXiv:astro-ph/0212216] [SPIRES entry](#)
4. **“Telling three from four neutrinos with cosmology”**
K. N. Abazajian
Astropart. Phys. **19**, 303 (2003) [arXiv:astro-ph/0205238] [SPIRES entry](#)
5. **“Bulk QCD thermodynamics and sterile neutrino dark matter”**
K. N. Abazajian and G. M. Fuller
Phys. Rev. D **66**, 023526 (2002) [arXiv:astro-ph/0204293] [SPIRES entry](#)
6. **“Stringent constraints on cosmological neutrino antineutrino asymmetries from synchronized flavor transformation”**
K. N. Abazajian, J. F. Beacom and N. F. Bell
Phys. Rev. D **66**, 013008 (2002) [arXiv:astro-ph/0203442] [SPIRES entry](#)
7. **“SDSS J124602.54+011318.8: A Highly Luminous Optical Transient at z=0.385”**
D. E. Vanden Berk *et al.* [SDSS Collaboration]
Astrophys. J. **576**, 673 (2002) [arXiv:astro-ph/0111054] [SPIRES entry](#)
8. **“Direct detection of warm dark matter in the X-ray”**
K. Abazajian, G. M. Fuller and W. H. Tucker
Astrophys. J. **562**, 593 (2001) [arXiv:astro-ph/0106002] [SPIRES entry](#)

PUBLICATIONS (CONTINUED) _____

9. “**Testing the cosmic coincidence problem and the nature of dark energy**”
N. Dalal, K. Abazajian, E. Jenkins and A. V. Manohar
Phys. Rev. Lett. **87**, 141302 (2001) [arXiv:astro-ph/0105317] [SPIRES entry](#)
10. “**Sterile neutrino hot, warm, and cold dark matter**”
K. Abazajian, G. M. Fuller and M. Patel
Phys. Rev. D **64**, 023501 (2001) [arXiv:astro-ph/0101524] [SPIRES entry](#)
11. “**The cosmological bulk neutrino catastrophe**”
K. Abazajian, G. M. Fuller and M. Patel
Phys. Rev. Lett. **90**, 061301 (2003) [arXiv:hep-ph/0011048] [SPIRES entry](#)
12. “**New connection between central engine weak physics and the dynamics of gamma-ray burst fireballs**”
J. Pruet, K. Abazajian and G. M. Fuller
Phys. Rev. D **64**, 063002 (2001) [arXiv:astro-ph/0009144] [SPIRES entry](#)
13. “**Can a large neutron excess help solve the baryon loading problem in gamma ray burst fireballs?**”
G. M. Fuller, J. Pruet and K. Abazajian
Phys. Rev. Lett. **85**, 2673 (2000) [arXiv:astro-ph/0004313] [SPIRES entry](#)
14. “**Transformation induced nonthermal neutrino spectra and primordial nucleosynthesis**”
K. Abazajian, X. Shi and G. M. Fuller
arXiv:astro-ph/9909320 [SPIRES entry](#)
15. “**Comments regarding ‘On neutrino-mixing-generated lepton asymmetry and the primordial helium-4 abundance’**”
X. d. Shi, G. M. Fuller and K. Abazajian
arXiv:astro-ph/9909221 [SPIRES entry](#)
16. “**The increase to the primordial He-4 yield in the two-doublet four-neutrino mixing scheme**”
K. Abazajian, G. M. Fuller and X. Shi
Phys. Rev. D **62**, 093003 (2000) [arXiv:astro-ph/9908081] [SPIRES entry](#)
17. “**Neutrino-mixing-generated lepton asymmetry and the primordial He-4 abundance**”
X. d. Shi, G. M. Fuller and K. Abazajian
Phys. Rev. D **60**, 063002 (1999) [arXiv:astro-ph/9905259] [SPIRES entry](#)

CONFERENCE PROCEEDINGS _____

1. “**The cosmological energy density of neutrinos from oscillation measurements**”
K. Abazajian
arXiv:hep-ph/0312163 [SPIRES entry](#)
Proceedings of NuFact 03, 5th International Workshop on Neutrino Factories & Superbeams, 5-11 June 2003, Columbia University, New York
2. “**Gamma-ray burst afterglows**”
K. Abazajian
Proceedings of Les Rencontres de Physique de la Vallée d' Aoste, La Thuile, Italy, 3-9 March, 2002
3. “**Active-sterile neutrino mixing in the early universe and primordial nucleosynthesis**”
K. Abazajian, X. d. Shi and G. M. Fuller
arXiv:astro-ph/9904052 [SPIRES entry](#)
Proceedings of American Physical Society (APS) Meeting of the Division of Particles and Fields (DPF 99), Los Angeles, CA, 5-9 Jan 1999
4. “**Are gamma-ray bursts signals of supermassive black hole formation?**”
K. Abazajian, G. M. Fuller and X. Shi
arXiv:astro-ph/9812287 [SPIRES entry](#)
Proceedings of International Conference on the Activity of Galaxies and Related Phenomena, Byurakan, Armenia, 17- 21 Aug 1998
5. “**Baryon/anti-baryon inhomogeneity and big bang nucleosynthesis**”
K. Abazajian and G. M. Fuller
arXiv:astro-ph/9812288 [SPIRES entry](#)
Proceedings of 3rd International Symposium on Sources and Detection of Dark Matter in the Universe (DM 98), Santa Monica, CA, 18-20 Feb 1998

COLLOQUIA AND INVITED CONFERENCE PRESENTATIONS _____

Neutrino Cosmology

Physics Colloquium, New Mexico State University, October 2003

Cosmological Measurements of Neutrino Parameters

Weak Interactions and Neutrinos, Lake Geneva, Wisconsin, October 2003

Precision Cosmological Measurement of Neutrino Mass

Eleventh Lomonosov Conference on Elementary Particle Physics, Moscow State University, August 2003

Galaxy Bias in the SDSS

Santa Fe Cosmology Workshop, July 2003

Sterile Neutrinos in Astrophysics and Cosmology

Neutrino Conference, Kavli Institute for Theoretical Physics, March 2003

Neutrino Cosmology

Aspen Winter 2003 Conference on Particle Physics, January 2003

Telling Three from Four Neutrinos with Cosmology

COSMO-02, International Workshop on Particle Physics and the Early Universe, Chicago, September 2002

Gamma-Ray Burst Afterglows

Les Rencontres de Physique de la Vallée d'Aoste, La Thuile, Italy, March 2002

Are Gamma-Ray Bursts Signals of Supermassive Black Hole Formation?

International Conference on the Activity of Galaxies and Related Phenomena, Byurakan, Armenia, August 1998

SEMINARS AND CONTRIBUTED CONFERENCE TALKS _____

Precision Cosmological Measurements of Neutrino Mass

Theoretical Particle Physics Seminar, University of California, Los Angeles,
October 2003

The Cosmological Energy Density of Neutrinos from Oscillation Measurements

5th International Workshop on Neutrino Factories & Superbeams, Columbia
University, New York, June 2003

Neutrino Mass and Dark Energy from Weak Lensing

Great Lakes Cosmology Workshop, Ann Arbor, Michigan, May 2003

Massive Neutrinos in the New Cosmology

Joint Experimental and Theoretical Physics Seminar, Fermilab, April 2003

Sterile Neutrino Dark Matter

Workshop on Neutrino News from the Lab and the Cosmos, Fermilab,
October 2002

New Constraints on Neutrino Degeneracies

Astrophysics Seminar, University of Notre Dame, September 2002

Direct Detection of the Dark Matter in the X-ray

Predictions of Cold Dark Matter on Small Scales Workshop, Center for Cos-
mological Physics, University of Chicago, August 2002

Stringent Constraints on Cosmological Lepton Number from Solar Neutrinos

Santa Fe Summer Cosmology Workshop, July 2002

Pheno 2002 Symposium, University of Wisconsin, Madison, April 2002

Finding and Resolving Crises in Cold Dark Matter

Aspen Workshop on Large Scale Structure in the Era of Large Surveys, Aspen
Center for Physics, June 2002

Neutrino Cosmology

Institute for Nuclear Theory Mini-workshop on Neutrino Physics, Program on
Nucleosynthesis, April 2002

Making Dark Matter and Deriving Constraints with Neutrino Mixing in the Early
Universe, Center for Cosmological Physics Seminar, University of Chicago,
November 2001

A Cosmic “Coincidometer”

Cosmology Seminar, Department of Physics, University of California Davis,
October 2001

SEMINARS AND CONTRIBUTED CONFERENCE TALKS (CONTINUED) _____

Direct Detection of Warm Dark Matter

Theoretical Physics Seminar, Purdue University, September 2001

Cold Neutrino Dark Matter

Nuclear Physics Seminar, Lawrence Livermore National Laboratory,
February 2001

Theoretical Astrophysics Group Seminar, Fermilab, January 2001

Theoretical Physics Seminar, TRIUMF, Vancouver, January 2001

Sterile Neutrinos in the Early Universe

NATO Advanced Study Institute 2000: Recent Developments in Particle
Physics and Cosmology, Cascais, Portugal, July 2000

Neutrino Mixing in the Early Universe and the Two-doublet Neutrino Mass Model

Institute for Nuclear Theory Program on Low-Energy Neutrino Physics,
August 1999

Active-Sterile Neutrino Mixing and Primordial Nucleosynthesis

American Physical Society Meeting of the Division of Particles and Fields, Los
Angeles, California, January 1999

Baryon/Anti-Baryon Inhomogeneity and Big Bang Nucleosynthesis

The 3rd International Symposium on Sources and Detection of Dark Matter
in the Universe, Marina Del Rey, California, February 1998

REFERENCES _____

Scott Dodelson

Theoretical Astrophysics, MS209
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George Fuller

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