

Publication List

Publications in Refereed Journals

South Pole Telescope Collaboration publications: 5 in 2018, 3 in 2017, 4 in 2016, 8 in 2015, 5 in 2014, 9 in 2013, 8 in 2012, 7 in 2011 and 6 in 2010.

Planck Collaboration publications: 1 in 2017, 7 in 2016, 2 in 2015, 31 in 2014, 8 in 2013, 1 in 2012, 25 in 2011, and 1 in 2010.

B. Follin and L. Knox, “Insensitivity of the distance ladder Hubble constant determination to Cepheid calibration modelling choices,” *Mon. Not. Roy. Astron. Soc.* **477**, 4534 (2018).

Z. Pan, M. Kaplinghat, and L. Knox, “Searching for signatures of dark matter-dark radiation interaction in observations of large-scale structure”, *Phys. Rev. D* **97**, 3531 (2018).

Z. Pan, E. Anderes and L. Knox, “Approximate likelihood approaches for detecting the influence of primordial gravitational waves in cosmic microwave background polarization,” *Phys. Rev. D* **97**, 3512 (2018).

M. O’Dwyer, C. Craig, L. Knox and G. Starkman, “CMB-S4 and the hemispherical variance anomaly,” *Mon. Not. Roy. Astron. Soc.* **470**, 372 (2017).

L. Lancaster, F-Y Cyr-Racine, L. Knox and Z. Pan, “A tale of two modes: neutrino free-streaming in the early universe,” *J. of Cos. Astropart. Phys.* **7**, 33 (2017).

Z. Pan, L. Knox, B. Mulroe and A. Narimani, “Cosmic microwave background acoustic peak locations,” *Mon. Not. Roy. Astron. Soc.* **459**, 2513 (2016).

Z. Pan and L. Knox, “Constraints on neutrino mass from cosmic microwave background and large-scale structure,” *Mon. Not. Roy. Astron. Soc.* **454**, 3200 (2015).

M. Millea, B. D. Fields, and L. Knox, “New Bounds for Axions and Axion-Like Particles with keV-GeV Masses”, *Phys. Rev. D* **92**, 023010 (2015).

B. Follin, L. Knox, M. Millea and Z. Pan, “First Detection of the Acoustic Oscillation Phase Shift Expected from the Cosmic Neutrino Background,” *Phys. Rev. Lett.* **115**, 1301 (2015).

Z. Pan, L. Knox, and M. White, “Dependence of the Cosmic Microwave Background Lensing Power Spectrum on the Matter Density”, *Mon. Not. Royal Astronom. Soc.* **445**, 2941 (2014).

Z. Hou, R. Keisler, L. Knox, M. Millea and C. Reichardt, “How Massless Neutrino Affect the Cosmic Microwave Background Damping Tail”, *Phys. Rev.* **D87**, 083008 (2013).

C. Shang, Z. Haiman, L. Knox & P. Oh, “Improved Models for Cosmic Infrared Background Anisotropies: New Constraints on the IR Galaxy Population”, *Mon. Not. R. Astron. Soc.* **421**, 2832 (2012).

M. Millea, O. Doré, J. Dudley, G. Holder, L. Knox, L. Shaw, Y.-S. Song, O. Zahn, “Modeling Extragalactic Foregrounds and Secondaries for Unbiased Estimation of Cosmological Parameters From Primary CMB Anisotropy”, *Astrophys. J.* **746**, 4 (2012).

A. Abrahamse, L. Knox, S. Schmidt, P. Thorman, J. A. Tyson, H. Zhan, “Characterizing and Propagating Modeling Uncertainties in Photometrically Derived Redshift Distributions”, *Astrophys. J.* **734**, 36 (2011).

E. Anderes, L. Knox, A. van Engelen, “Mapping gravitational lensing of the CMB using local likelihoods”, *Phys. Rev. D* **83** 043523 (2011).

N. Hall, R. Keisler, L. Knox, C. Reichardt + SPT Collaboration, “Angular Power Spectra of the Millimeter-wavelength Background Light from Dusty Star-forming Galaxies with the South Pole Telescope”, *Astrophys. J.* **718**, 632 (2010).

M. D. Schneider, O. Holm & L. Knox, “Intelligent Design: On the Emulation of Cosmological Simulations”, *Astrophys. J.* **728**, 137 (2011).

H. Zhan, L. Knox & J. A. Tyson, “Distance, Growth Factor, and Dark Energy arXiv:astro-ph/0609591 Constraints from Photometric Baryon Acoustic Oscillation and Weak Lensing Measurements”, *Astrophys. J.* **690**, 923 (2009).

M. D. Schneider, L. Knox, S. Habib, K. Heitmann, D. Higdon, C. Nakhleh, “Simulations and cosmological inference: A statistical model for power spectra means and covariances”, *Phys. Rev. D* **78** 3529 (2008).

H. K. Eriksen, Greg Huey, R. Saha, F. K. Hansen, J. Dick, A. J. Banday, K. M. Gorski, P. Jain, J. B. Jewell, L. Knox, D. L. Larson, I. J. O’Dwyer, T. Souradeep & B. D. Wandelt, “A Re-analysis of the Three-year WMAP Temperature Power Spectrum and Likelihood”, *Astrophys. J.* **656**, 641 (2007).

L. Knox, Yong-Seon Song & H. Zhan, “Weighing the Universe with Photometric Redshift Surveys and the Impact on Dark Energy Forecasts”, *Astrophys. J.* **652**, 857 (2006).

M. Schneider, L. Knox, H. Zhan & A. Connolly, “Using Galaxy Two-point Correlation Functions to Determine the Redshift Distributions of Galaxies Binned by Photometric Redshift”, *Astrophys. J.* **651**, 14 (2006).

X. Wang, M. Tegmark, M. Santos & L. Knox, “Twenty-one Centimeter Tomography with Foregrounds”, *Astrophys. J.* **650**, 529 (2006).

L. Knox, Y.-S. Song & J. A. Tyson, “Two Windows on Acceleration and Gravitation: Dark Energy or New Gravity?”, *Phys. Rev. D* **74**, 023512 (2006).

J. Dick, L. Knox & M. Chu, “Reduction of Cosmological Data for the Detection of Time-varying Dark Energy Density”, *JCAP* **07**, 1 (2006).

H. Zhan & L. Knox, “Baryon Oscillations and Consistency Tests for Photometrically-Determined

- Redshifts of Very Faint Galaxies”, *Astrophysical Journal* **644**, 663 (2006).
- H. Zhan, L. Knox, J.A. Tyson & V. Margoniner, “Exploring Large-scale Structure with Billions of Galaxies”, *Astrophysical Journal* **640**, 8 (2006).
- L. Knox, “Precision Measurement of the Mean Curvature”, *Phys. Rev. D* **73**, 023503 (2006).
- M. Chu, H.K. Eriksen, L. Knox, K.M. Gorski, J.B. Jewell, D.L. Larson, I.J. O’Dwyer & B.D. Wandelt, “Cosmological Parameter Constraints As Derived from the Wilkinson Microwave Anisotropy Probe Data via Gibbs Sampling and the Blackwell-Rao Estimator”, *Phys. Rev. D* **61**, 103002 (2005).
- M. G. Santos, A. Cooray & L. Knox, “Multifrequency Analysis of 21 cm fluctuations From the Era of Reionization”, *Astrophysical Journal* **625**, 575 (2005).
- M. Chu & L. Knox, “Testing Cosmological Models and Understanding Cosmological Parameter Determinations with Metaparameters”, *Astrophysical Journal* **620**, 1 (2005).
- Y.-S. Song & L. Knox, “Determination of Cosmological Parameters from Cosmic Shear Data”, *Phys. Rev. D* **70**, 063510 (2004).
- H. Zhan & L. Knox, “Effect of Hot Baryons on the Weak-Lensing Shear Power Spectrum”, *Astrophysical Journal Lett.* **616**, 75 (2004).
- P.C. Farese, G. Dall’Oglio, J.O. Gundersen, B.G. Keating, S. Klawikowski, L. Knox, A. Levy, P.M. Lubin, C.W. O’Dell, A. Peel, L. Piccirillo, J. Ruhl & P.T. Timbie, “COMPASS: An Upper Limit on Cosmic Microwave Background Polarization at an Angular Scale of 20’ ”, *Astrophysical Journal* **610**, 625 (2004).
- L. Knox, G. Holder & S. Church, “Effects of sub-mm and radio point sources on the recovery of Sunyaev-Zeldovich galaxy cluster parameters”, *Astrophys. J.*, **612**, 96 (2004).
- M. Kaplinghat, L. Knox & Y.-S. Song, “Determining Neutrino Mass from the CMB Alone”, *Phys. Rev. Lett.* **91**, 1301 (2003).
- M. G. Santos, A. Cooray, Z. Haiman, L. Knox & C.-P. Ma, “Small-scale CMB Temperature and Polarization Anisotropies due to Patchy Reionization”, *Astrophys. J.* **598**, 756 (2003).
- J. E. Aguirre, J. J. Bezaire, E. S. Cheng, D. A. Cottingham, S. S. Cordone, T. M. Crawford, D. J. Fixsen, L. Knox, S. S. Meyer, H. U. Norgaard-Nielsen, R. F. Silverberg, P. Timbie & G. W. Wilson, “The Spectrum of Integrated Millimeter Flux of the Magellanic Clouds and 30-Doradus from TopHat and DIRBE Data”, *Astrophys. J.* **596**, 273 (2003).
- Y.-S. Song & L. Knox, “The Detectability of Departures from the Inflationary Consistency Equation”, *Phys. Rev. D* **68**, 043518 (2003).
- G. Holder, Z. Haiman, M. Kaplinghat and L. Knox, “The Reionization History at High Redshifts II: Estimating the Optical Depth to Thomson Scattering from CMB Polarization”, *Astrophys. J.*

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M. Chu, M. Kaplinghat & L. Knox, “Normal Parameters for Super-Radical Compression of CMB Data”, *Astrophys. J.* **596**, 725 (2003).

Y.-S. Song, A. Cooray, L. Knox & M. Zaldarriaga, “The Far-Infrared Background Correlation with CMB Lensing”, *Astrophys. J.* **590**, 664 (2003).

M. Kamionkowski & L. Knox, “Aspects of the Cosmic Microwave Background Dipole”, *Phys. Rev. D* **67**, 063001 (2003).

O. Doré, L. Knox & A. Peel, “Gravitational Potential Reconstruction from Peculiar Velocity and Weak Lensing Measurements”, *Astrophys. J.* **585** L81 (2003).

S. Church, L. Knox & M. White, “The Effect of Bandpass Uncertainties on Component Separation”, *Astrophys. J.* **582**, 63L (2003).

M. Kaplinghat, M. Chu, Z. Haiman, G. Holder, L. Knox and C. Skordis, “Probing the Reionization History of the Universe Using the Cosmic Microwave Background Polarization”, *Astrophys. J.* **583**, 24 (2003).

M. Kaplinghat, L. Knox and C. Skordis, “Rapid Calculation of Theoretical CMB Angular Power Spectra”, astro-ph/0203413, *Astrophys. J.* **578**, 665 (2002).

L. Knox and Y.S. Song, “Limit on the detectability of the energy scale of inflation”, *Phys. Rev. Lett.* **89**, 011303 (2002).

K. Coble, S. Dodelson, M. Dragovan, K. Ganga, L. Knox, J. Kovac, B. Ratra, T. Souradeep, “Cosmic Microwave Background Anisotropy Measurement From Python V”, *Astrophys. J.*, **584**, 585 (2003).

L. Knox, N. Christensen and C. Skordis, “The Age of the Universe and the Cosmological Constant Determined from Cosmic Microwave Background Anisotropy Measurements”, *Astrophys. J.* **563** L95 (2001).

O. Doré, L. Knox and A. Peel, “CMB Power Spectrum Estimation via Hierarchical Decomposition”, *Phys. Rev. D* **64** 083001 (2001).

N. Christensen, R. Meyer, L. Knox and B. Luey, “Bayesian Methods for Cosmological Parameter Estimation from Cosmic Microwave Background Measurements”, *Classical and Quantum Gravity*, **18**, 2677 (2001).

D. Huterer, L. Knox and R. C. Nichol, “The Angular Power Spectrum of EDSGC Galaxies”, *Astrophys. J.* **555**, 547 (2001).

L. Knox, A. Cooray, D. Eisenstein and Z. Haiman, “Probing Early Structure Formation with Far-Infrared Background Correlations”, *Astrophys. J.* **550**, 7 (2001).

- M. Kaplinghat, L. Knox and M.S. Turner, “Annihilating Cold Dark Matter”, *Phys.Rev.Lett.* **85**, 3523 (2000).
- L. Knox and L. Page, “Characterizing the Peak in the CMB Angular Power Spectrum”, *Phys. Rev. Lett.*, **85** 1366 (2000).
- S. Dodelson and L. Knox, “Dark Energy and the Cosmic Microwave Background Radiation”, *Phys. Rev. Lett.* **84**, 3523 (2000).
- Z. Haiman and L. Knox, “Correlations in the Far Infrared Background”, *Astrophys. J.* **530**, 124 (2000).
- G.W. Wilson, L. Knox, S. Dodelson, K. Coble, E.S. Cheng, D.A. Cottingham, D.J. Fixsen, A.B. Goldin, C.A. Inman, M.S. Kowitt, S.S. Meyer, L.A. Page, J.L. Puchalla, J.E. Ruhl, R.F. Silverberg, “New CMB Power Spectrum Constraints from MSAMI”, *Astrophys. J.* **532**, 57 (2000).
- J. R. Bond, A. H. Jaffe and L. Knox, “Radical Compression of Cosmic Microwave Background Data”, *Astrophys. J.* **533**, 19-37 (2000).
- L. Knox, “Cosmic Microwave Background Anisotropy Window Functions Revisited”, *Phys. Rev. D* **60**, 103516 (1999).
- L. Knox, “Forecasting Foreground Impact on Cosmic Microwave Background Measurements”, *Monthly Notices of the Royal Astronomical Society* **307**, 977 (1999).
- K. Coble, M. Dragovan, J. Kovac, N. W. Halverson, W. L. Holzapfel, L. Knox, S. Dodelson, K. Ganga, D. Alvarez, J. B. Peterson, G. Griffin, M. Newcomb, K. Miller, S. R. Platt, G. Novak, “Anisotropy in the Cosmic Microwave Background at Degree Angular Scales: Python V Results”, *Astrophys. J. Lett.* **519**, 5 (1999).
- L. Knox, R. Scoccimarro and S. Dodelson, “Impact of inhomogeneous reionization on cosmic microwave background anisotropy”, *Phys. Rev. Lett.* **81**, 2004 (1998).
- L. Knox, J. R. Bond, A. H. Jaffe, M. Segal and D. Charbonneau “Comparing Cosmic Microwave Background Experiments”, *Phys. Rev. D* **58**, 083004 (1998).
- J. R. Bond, A. H. Jaffe and L. Knox “Estimating the Power Spectrum of the Cosmic Microwave Background”, *Phys. Rev. D* **57**, 2117 (1998).
- E. S. Cheng, D. A. Cottingham, D. J. Fixsen, A. Goldin, C. A. Inman, L. Knox, M. S. Kowitt, S. S. Meyer, J. L. Puchalla and R. F. Silverberg “Detection of Cosmic Microwave Background Anisotropy by the Third Flight of MSAM” *Astrophys. J. Lett.* **488**, 59 (1997).
- B. Allen, R. Caldwell, S. Dodelson, L. Knox, E. P. S. Shellard, and A. Stebbins “CMB Anisotropy from Cosmic Strings at Angular Scales $\gtrsim 15'$ ” *Phys. Rev. Lett.* **79**, 2624 (1997).
- L. Knox “Cosmic Microwave Background Anisotropy Observing Strategy Assessment”, *Astrophys. J.* **480**, 72 (1997).

L. Knox “Determination of Inflationary Observables by Cosmic Microwave Background Anisotropy Experiments”, *Phys. Rev. D* **52**, 4307 (1995).

L. Knox and M. S. Turner “Detectability of Tensor Perturbations Through the Anisotropy of the Cosmic Background Radiation”, *Phys. Rev. Lett.* **73**, 3347 (1994).

S. Dodelson, L. Knox and E. W. Kolb “Testing Inflation with the Cosmic Microwave Background”, *Phys. Rev. Lett.* **72**, 3443 (1994).

L. Knox and A. V. Olinto “Initial Conditions for Natural Inflation”, *Phys. Rev. D* **48**, 946 (1993).

L. Knox and M. S. Turner “Inflation at the Electroweak Scale”, *Phys. Rev. Lett.* **70**, 371 (1993).

Invited Reviews

J. R. Bond, R. Crittenden, A. H. Jaffe and L. Knox, “Computing Challenges of the Cosmic Microwave Background”, *Computing in Science and Engineering*, vol. 1, no. 2, 21 (1999).

Z. Haiman and L. Knox “Reionization of the Intergalactic Medium and its Effect on the CMB”, *Microwave Foregrounds*, eds. A. De Oliveira-Costa and M. Tegmark (ASP, San Francisco, 1999).

Conference Proceedings

L. Knox, A. Albrecht, Y.-S. Song, J.A. Tyson, D. Wittman, “Weak Lensing and Supernovae: Complementary Probes of Dark Energy”, Proceedings of the ‘Observing Dark Energy Workshop’ in Tucson, AZ, 2004.

P. C. Farese, G. Dall’Oglio, J. Gundersen, B. Keating, S. Klawikowski, L. Knox, A. Levy, C. O’Dell, A. Peel, L. Piccirillo, J. Ruhl and P. Timbie, “COMPASS: An Instrument for Measuring the Polarization of the CMB on Intermediate Angular Scales”, Proceedings of The Cosmic Microwave Background and its Polarization (eds. S. Hanany and K. Olive) (2003).

L. Knox, “CMB Signatures of Extended Reionization”, Proceedings of The Cosmic Microwave Background and its Polarization (eds. S. Hanany and K. Olive) (2003).

L. Knox, “Future Probes of the Primordial Scalar and Tensor Perturbation Spectra: Prospects from the CMB, Cosmic Shear and High-Volume Redshift Surveys”, Proceedings of the Davis Meeting on Cosmic Inflation (2003).

A. Peel and L. Knox, “Using Galaxy Cluster Peculiar Velocities to Constrain Cosmological Parameters”, Proceedings of the 5th International UCLA Symposium on Sources and Detection of Dark Matter and Dark Energy in the Universe (2002).

A. Cooray and L. Knox, “Conference Highlights: The Sloan Summit on Microwave Foregrounds”, *Publications of the Astronomical Society of the Pacific*, volume 111, number 757, 1999.

T. Souradeep, J. R. Bond, L. Knox, G. Efstathiou and M. S. Turner, “Prospects for Measuring Inflation Parameters with the CMB”, *Proceedings of the International Workshop on Particle Physics and the Early Universe*, ed. L. Roszkowski, World Scientific, 1998.

L. Knox, J. R. Bond and A. H. Jaffe “Power Spectrum Estimation”, *The Proceedings of the 18th Texas Symposium*, eds. A. Olinto, J. Frieman and D. Schramm, World Scientific, 1997.

A. H. Jaffe, L. Knox and J. R. Bond “Data Compression for CMB Experiments”, *The Proceedings of the 18th Texas Symposium*, eds. A. Olinto, J. Frieman and D. Schramm, World Scientific, 1997.

L. Knox “Observing Strategy Assessment”, *Proceedings of the XXXIst Moriond Meeting “Microwave Background Anisotropies”*, ed. F. Bouchet, World Scientific, 1997.

L. Knox “Testing Inflation with MAX, MSAM, Tenerife and COBE”, *Proceedings of the CWRU*

CMB Workshop, ed. Lawrence Krauss World Scientific, 1995.

Invited Talks

“CMB Overview,” KICP Workshop, University of Chicago, October 2018

“The Sound of Darkness,” KICP Workshop, University of Chicago, October 2018

“Insensitivity of H_0 to Cepheid apparent magnitude modelling assumptions,” KICC workshop, Cambridge, UK, May 2018

“Planck and the South Pole Telescope,” KICC workshop, Cambridge, UK, May 2018

“CMB-S4 Simulations”, Modeling the Extragalactic Sky, Berkeley, California, January 2018

“CMB-S4”, B Modes from Space Workshop, Berkeley, California, December 2017

“The Standard Cosmological Model: A Status Report”, Seminar at Case West Reserve University, Department of Physics, October 2017.

“CMB Lensing and Cosmological Parameters”, SLAC Lensing Workshop, Stanford, California, September 2017

“The Cosmic Microwave Background, the Hubble Constant, and Cosmological Models”, Seminar at Kavli Institute for Astronomy and Astrophysics, Beijing, China, July 2017.

“The Standard Cosmological Model and CMB Power Spectra”, CosKASI, Korea, April 2017.

“Neutrino Cosmology I”, Precision Investigations of the Neutrino Sector, Stanford, March 2017.

“Measuring Neutrinos with Cosmology,” American Physical Society annual meeting, April 2016.

“Weighing the Neutrinos in the Cosmic Neutrino Background,” Northwestern University Department of Physics colloquium, February 2016.

“We Are Quantum Fluctuations: The Cosmic Microwave Background and the Quest for the Origin of All Structure in the Universe”, Department of Physics, University of California San Diego, March 2015.

“We Are Quantum Fluctuations: The Cosmic Microwave Background and the Quest for the Origin of All Structure in the Universe”, Department of Physics, Columbia University, February 2015.

“We Are Quantum Fluctuations: The Cosmic Microwave Background and the Quest for the Origin of All Structure in the Universe”, Department of Physics Colloquium, University of Illinois, February 2015.

“Determining Cosmological Parameters”, Theoretical Astrophysics and General Relativity Sem-

inar, UIUC, February 2015.

“The Cosmic Neutrino Background,” University of Oregon Institute for Theoretical Science, December 2014.

“Planck and Cosmic Inflation,” Colloquium for Department of Physics at the University of Oregon, December 2014.

“The Marvelous Success of the Standard Cosmological Model,” Cosmo 2014 Plenary, August 2014.

“The Marvelous Success of the Standard Cosmological Model,” Case Western Reserve University, February 2014.

“The Marvelous Success of the Standard Cosmological Model,” Colloquium for Department of Physics at Ohio State University, February 2014.

“The Marvelous Success of the Standard Cosmological Model,” University of Pittsburgh, February 2014.

“The Cosmic Neutrino Background,” Colloquium at Argonne National Laboratory, January 2014.

“The Marvelous Success of the Standard Cosmological Model,” Canadian Institute for Theoretical Astrophysics, November (2013).

“Cosmological Implications of Recent Low-noise, High-resolution Measurements of the Cosmic Microwave Background,” Colloquium at the University of Kentucky Department of Physics, September 2013.

“Overview of Results from the Planck Satellite (and some from SPT),” Two-hour presentation at the Santa Fe Cosmology Workshop, July 2013.

“Planck versus SPT and Implications for Neutrinos,” at Cosmology and Fundamental Physics with Planck, CERN, Geneva, Switzerland, June 2013.

“Meeting Summary,” at Cosmology in the Planck Era, Princeton University, June 2013.

“Conference Summary,” Conference: Mining the Cosmic Frontier in the Planck Era, UC Davis, May 2013.

“The Universe According to Planck,” Brookhaven Forum, Brookhaven National Lab, May 2013.

“Lensing Oddities,” KITP Conference on Primordial Cosmology, April 2013.

“The Universe According to Planck,” UC Irvine Department of Physics Colloquium, April 2013.

“The Universe According to Planck,” Kavli Keynote Session at the Annual Meeting of the APS, April 2013.

“The Universe According to Planck,” UC Davis Department of Physics Colloquium, March 2013.

“The Universe According to Planck,” Fermilab Colloquium, March 2013.

“Big Overview”, opening talk at “Big Bang, Big Data, Big Computers” at APC, Paris, France, September 2012.

“Neutrino Fever and How I Recovered”, Imperial College Astrophysics Seminar, June 2012.

“Neutrinos and Cosmology”, in session “Hot Topics in Astrophysics” at the APS Meeting, April 2012.

“Neutrino Fever and How I Recovered”, Yale Center for Astronomy and Astrophysics Seminar, January 2012.

“Neutrino Fever and How I Recovered”, UNAM, Mexico City, High Energy Physics Seminar, January 2012.

“Neutrino Fever and How I Recovered”, UC Davis, Department of Physics Colloquium, November 2011.

“Adventures in the CMB damping tail: Neutrino Fever and How I Recovered”, UC Santa Barbara, Department of Physics, Astrophysics Seminar, October 2011.

“Adventures in the CMB damping tail: La fièvre neutrino et comment je me suis soigné”, Institut d’Astrophysique de Paris Seminar, July 2011.

“Are we seeing evidence of extra neutrino species in the recent high-resolution measurements of the cosmic microwave background by the south pole telescope?”, Caltech Observational Cosmology Group, May 2011.

“Cosmology in the Era of the Large Hadron Collider”, Pheno 2011, Madison, Wisconsin, May 2011.

“Sound Waves at the Edge of the Observable Universe”, CSUS Physics department seminar, March 2011.

“The Cosmic Microwave Background at High Resolution”, UC Davis cosmology seminar, Davis, California, February 2011.

“First Results from Planck”, UC Davis Joint Theory Seminar, Davis, California January 2011.

“First Results from Planck”, Kavli Institute for Particle Astrophysics and Cosmology Seminar, January 2011.

“Introduction to Power Spectrum Estimation”, Ohio State University Gamma-ray Workshop, July 2010.

“Anisotropies in the Infrared Background as a Probe of the Complete History of Star Formation”, Columbia University Astronomy Department Colloquium, February 2010.

“South Pole Telescope millimeter-wave observations of thermal emission by dust from 100 million high- z galaxies”, Jet Propulsion Laboratory, Pasadena, California, January 2010.

“Cosmic Microwave Background as a Probe of Inflation”, University of Iowa High Energy Physics Seminar, March 2009.

“Dark and Useless Energy”, University of Iowa Department of Physics Colloquium, March 2009.

“Dark and Useless Energy”, SPESIF 2009, Huntsville Alabama, February 2009.

“Future Probes of Cosmic Acceleration”, Physics Division Colloquium, Argonne National Laboratory, March 2008.

“Why Measure the Mean Curvature Even Better and How to Do It”, Center for Cosmology and Astroparticle Physics seminar, Ohio State University, February 2008.

“Monte Carlo Methods”, Cosmic Microwave Radiation, Aspen, Colorado, January 2008.

“Closing Remarks”, Data Analysis in Cosmology, Santander, Spain, July 2007.

“Science with Future CMB Observations”, Outstanding Questions in Cosmology, Imperial College, London, UK, March 2007.

“Probes of Cosmic Acceleration: Supernovae, Baryon Acoustic Oscillations and Weak Lensing”, UC Irvine Physics Colloquium, Irvine, California, February 2007.

“Future Probes of Cosmic Acceleration”, UC Boulder Department of Astrophysical and Planetary Sciences Colloquium, Boulder, Colorado, October 2006

“How Optical Imaging Surveys Can Constrain Cosmology”, Workshop on Nongaussianity in Cosmology, Trieste, Italy, July 2006

“CMB Theory Overview”, XIth Marcel Grossmann Meeting on General Relativity, Berlin, Germany, July 2006

“The Report of the Dark Energy Task Force and More”, Santa Fe Cosmology Workshop, Santa Fe, New Mexico, June 2006

“A View of the Edge of the Observable Universe: Discovering Our Origins”, University of California, Santa Cruz physics department colloquium, June 2006

“The Science Potential of Planck”, Annual External Review of U.S. Planck, Pasadena, California, May 2006

“Main Science Goals for Current and Future Experiments”, Fundamental Physics with Cosmic

Microwave Background Radiation, Irvine, California, March 2006

“Science from Planck II”, Fundamental Physics with Cosmic Microwave Background Radiation, Irvine, California, March 2006

“Dark Energy (and Curvature) from the Ground (and Space)”, Dark Matter 2006, Marina del Rey, California, February 2006

“Probing Dark Energy and Curvature with Standard Rulers”, Canadian Institute for Theoretical Astrophysics, Toronto, Canada, August 2005”

“Probing Dark Energy and Curvature with Standard Rulers”, Institute for Nuclear and Particle Astrophysics, Lawrence Berkeley Laboratory, Berkeley, California, July 2005

“Precision Measurement of the Mean Curvature”, Santa Fe Cosmology Workshop, Santa Fe, New Mexico, July 2005.

“Cosmology from Distance and Growth”, University College London, London, United Kingdom, March 2005.

“Cosmology from Distance and Growth”, International Workshop Cosmology with SZ and X-ray Observatories, Sophia University, Tokyo, Japan, March 2005.

“Probing Inflation”, plenary talk at ‘22nd Texas Symposium on Relativistic Astrophysics’, Menlo Park, California, December 2004.

“Beyond WMAP”, at ‘Beyond Spitzer’, Pasadena, California, June 2004.

“Precision Cosmology with the CMB”, American Physical Society annual meeting, Denver, Colorado, May 2004.

“Dark Energy & Neutrino Mass from Future Cosmic Shear Observations”, at ‘Mitchell Symposium on Observational Cosmology’, College Station, Texas, April 2004.

“Dark Energy & Neutrino Mass from Future Cosmic Shear Observations”, at University of Illinois Department of Physics High Energy Physics seminar, April 2004.

“Weak Lensing and Supernovae: Complementary Probes of Dark Energy”, at ‘Observing Dark Energy’, Tucson, Arizona, March 2004.

“Neutrino Mass and Dark Energy from Future Cosmic Shear Observations”, Kavli Institute for Particle-Astrophysics and Cosmology, Stanford, California, February 2004.

“WMAP and Beyond”, University of Colorado Department of Astrophysical and Planetary Sciences colloquium, Boulder, Colorado, November 2003.

“Velocities, Gas Temperatures and other Benefits of Multi-frequency SZ Measurements”, University of Chicago Department of Astronomy and Astrophysics colloquium, Chicago, Illinois, October 2003.

“CMB and the SZ Surveys”, at ‘Cosmology with Sunyaev-Zeldovich Cluster Surveys’, Chicago, Illinois, September 2003.

“WMAP and Beyond”, colloquium at University of Colorado, Boulder, CO, November 2003.

“CMB Signatures of Extended Reionization”, University of Pennsylvania, Philadelphia, PA, July, 2003.

“The CMB at Higher Resolution and Higher Sensitivity”, Aspen Center for Physics, Aspen, CO, June 2003.

“The Wilkinson Microwave Anisotropy Probe”, California State University, Sacramento, Department of Astronomy Colloquium, April 2003.

“Future Probes of the Scalar and Tensor Primordial Perturbation Spectra”, at Davis Meeting on Cosmic Inflation, Davis, CA, March, 2003.

“CMB Signatures of Extended Reionization”, at The Cosmic Microwave Background Radiation and its Polarization, Minneapolis, Minnesota, March, 2003.

“Applications of Secondary CMB Anisotropy”, UC Berkeley, Berkeley, CA, December, 2002.

“Applications of Secondary CMB Anisotropy”, Center for Cosmological Physics, Chicago, IL, October, 2002.

“CMB: An Overview”, at Cosmo-02 International Workshop on Particle Physics and the Early Universe, Chicago, IL, September, 2002.

“Secondary CMB Anisotropies”, The New Cosmology Confronts Observation, Kavli Institute for Theoretical Physics, Santa Barbara, CA, August, 2002.

“Beyond Planck”, Santa Fe Polarization Meeting, July 13, 2002.

“Beyond Planck”, Santa Fe Cosmology Workshop, July 11, 2002.

“CMB and the New Cosmology”, American Physical Society, High Energy Astrophysics Division of the American Astronomical Society joint meeting, April 2002.

“The Greenspan Universe: 14 Billion Years of Continuous Expansion with Only a Couple Episodes of Inflation”, UC San Diego Physics Colloquium, February 2002.

“The Age of the Universe”, Lawrence Berkeley National Lab, January 2002.

“The Age of the Universe”, Lawrence Livermore National Lab, October, 2001.

“The Age of the Universe”, Stanford University, October, 2001.

“Interpretations of CMB Data: The Qualitative and the Quantitative”, Santa Fe Cosmology Work-

shop, July 2001.

“CMB Anisotropy as Evidence of Inflation”, Snowmass Workshop, July 2001.

“Status of $\delta T/T$ measurements”, Snowmass Workshop, July 2001.

“CMB Polarization”, ESTEC Workshop, Netherlands, January 2001.

“Peak Experiences: What Do They Mean?”, Enrico Fermi Institute, University of Chicago, June 2000.

“Peak Experiences: What Do They Mean?”, College de France, Paris, France, May 2000.

“Implications of the Peak”, UC Davis, February 2000.

“Implications of the Peak”, Northwestern University, February 2000.

“Implications of the Peak”, Dartmouth College, February 2000.

“Probing The Dark Sector”, Northwestern University, November, 1999.

“Probing The Dark Sector”, Carnegie Mellon University, November, 1999.

“The Dark Sector”, UW Madison, November, 1999.

“Dark Energy and the CMB”, UC Berkeley, October, 1999.

“Implications of the Peak”, Notre Dame, September, 1999.

“Implications of the Peak”, Brown University, September, 1999.

“Overview of CMB Data Analysis”, Santa Fe Cosmology Workshop, Santa Fe, New Mexico, June 1999.

“Physics from the Microwave Sky”, UC Davis, June, 1999.

“CMB Theory”, Inner Space / Outer Space II, Fermilab, May, 1999.

“Progress in 3°K Cosmology”, UC Davis, April, 1999.

“Progress in 3°K Cosmology”, UC Berkeley, March, 1999.

“Progress in 3°K Cosmology”, Caltech, March, 1999.

“Y 3°K?”, U Chicago, March, 1999.

“Progress in 3°K Cosmology”, U Penn, February, 1999.

“Progress in 3°K Cosmology”, U Chicago, February, 1999.

“Cosmology from the Microwave Sky”, University of Western Ontario, London, Ontario, January 1998.

“The Cosmic Microwave Background”, University of Waterloo, Waterloo, Ontario, October 1997.

“Comparing Cosmic Microwave Background Observations: Saskatoon and MSAM”, University of Chicago, Chicago, Illinois, October 1997.

“The Power Spectrum from Cosmic Strings”, Topological Defect Workshop, Imperial College, London, UK, April 1997.

“Three Degree News About One Degree Scales”, Cambridge University, Cambridge, UK, April 1997.

“Microwaves Observed, Power Spectrum Inferred, Strings Not Preferred”, CITA, Toronto, Ontario, April 1997.

“Cosmic Microwave Background Anisotropy from Cosmic Strings”, University of British Columbia, Vancouver, British Columbia, November 1996.

“Measuring the CMB Power Spectrum”, CITA, Toronto, Ontario, April 1996.

“Cosmic Microwave Background Anisotropy via the Medium Scale Anisotropy Measurement”, Queens University, Kingston, Ontario, March 1996.

“CMB: Recent observations, a test of inflation, and detecting gravity waves”, University of Wisconsin at Milwaukee Relativity Group, May 1994.

“Large Angle Microwave Background Anisotropy in the Primeval Isocurvature Baryon Model”, Harvard-Smithsonian Center for Astrophysics, Cambridge, Massachusetts April 1993.

Conference Organizing

Nu Physics at UCSD, November 2018

LK initiated the workshop and was a member of the scientific organizing committee.

CMB-S4 Workshops 2 per year from September 2016 to October 2018

LK was a member of the scientific organizing committee for all of these.

CMB-S4 Workshop at Lawrence Berkeley Laboratory

LK was a member of the scientific organizing committee for this ~ 150 person collaboration meeting in January 2016.

CMB-S4 Workshop at the University of Michigan

LK was a member of the scientific organizing committee for this ~ 120 person collaboration meeting in September 2016.

Davis Cosmic Frontiers Conferences

Andreas Albrecht, Nemanja Kaloper and LK organized a pair of conferences in Davis, the first of which, chaired by LK, was the official Planck collaboration post-release US conference. May 2013.

Local Organizer of 'Cosmo 2006'

Andreas Albrecht, Nemanja Kaloper and LK organized an international meeting held in North America every other year, 'Cosmo 2006', in Tahoe City, California. September 2006.

Co-convenor of APS Division of Particles and Fields 2004 meeting parallel session:

"Cosmology (Experiment and Theory)" at UC Irvine
August 2004.

Lead Organizer of 'Cosmology with Sunyaev-Zeldovich Cluster Surveys'

John Carlstrom, LK, Andrey Kravtsov and Martin White organized 'Cosmology with Sunyaev-Zeldovich Cluster Surveys' Center for Cosmological Physics, Chicago, IL
September 2003.

Local Organizer of 'Davis Meeting on Cosmic Inflation'

Andreas Albrecht, Nemanja Kaloper, Manoj Kaplinghat, LK and Mario Santos organized the 'Davis Meeting on Cosmic Inflation'
March 2003.

Co-convenor of Subtopic P4.3: "CMB and Inflation"

2001 Snowmass Workshop, Snowmass Colorado.

Public Lectures

“Seeing the Big Bang,” UC Davis Open House (Picnic Day), April 2018.

“Einstein’s Big Ideas About Time and Space,” UC Davis Open House (Picnic Day), April (2016).

“Images of the Infant Universe: The Latest Results from the Planck Satellite”, Silicon Valley Astronomy Lecture Series, November (2014).

“The Big Bang in Context,” Mt. Tamalpais Astronomical Society, Mt. Tamalpais Mountain Theater, August (2014).

“Everything You Ever Wanted to Know About the Big Bang (But Were Afraid to Ask),” UC Davis Open House (Picnic Day), April (2014).

“Confirmed Truths and Remaining Mysteries Regarding the Origin of the Universe,” The 2014 McMaster Cosmology Lecture at the University of Toledo, February (2014).

“Confirmed Truths and Remaining Mysteries Regarding the Origin of the Universe,” Cleveland Museum of Natural History, February (2014).

“Confirmed Truths and Remaining Mysteries Regarding the Origin of the Universe,” on the Extreme Screen at the Columbus, Ohio Center of Science and Industry, February (2014).

“Confirmed Truths and Remaining Mysteries Regarding the Origin of the Universe,” Allegheny Observatory, February (2014).

“An Image of the Infant Universe as Revealed by the Planck Satellite,” Annual Meeting of the Astronomical Society of the Pacific, San Jose, California, July (2013).

“A Picture of the Infant Universe,” Picnic Day (UC Davis Open House), Davis, California, April (2013).

“Planck Update or Understanding Angular Power Spectra,” for high school physics and math teachers gathered for a training workshop at Sonoma State, July (2012).

“We are Amplified Quantum Fluctuations: The Story of the Creation of All Structure in the Universe,” Santa Barbara Museum of Natural History, October (2011).

“We are Amplified Quantum Fluctuations: The Story of the Creation of All Structure in the Universe,” Mount Diablo Astronomical Society, Walnut Creek, CA, October (2011).

“We are Amplified Quantum Fluctuations: The Story of the Creation of All Structure in the Universe,” Science in the River City (science teacher workshop) Dinner Talk, Sacramento, CA, October (2011).

“Where did the elements come from? A Story of Discovery That Takes Us from the Earth, to the Stars, to the Big Bang”, Holmes Junior High School 7th Grade Science Class, June 2011.

“Beyond the Solar System”, North Davis Elementary School 4th Grade Class, June 2011.

“Six Lectures on the Frontiers of Physics” (overview for picnic day event I organized) and “Seeing Sound in the Primordial Plasma” (my individual contribution), Picnic Day, April 2011.

“A Sample Size of One”, TEDxDavis, Davis, CA, April 2011. Available online.

“Do We Understand the Large-Scale Structure of the Universe?”, Wonderfest, Berkeley, CA, November 2010. Online at fora.tv.

“Einstein’s Big Ideas about Time and Space”, Picnic Day, Davis, CA, April 2008.

“The Origin and Fate of the Universe”, Davis Chancellor’s Club, Davis, CA, December 2005

“Extremes of Time and Space”, Explorit Science Center, Davis, CA, August 2005.”

“Einstein’s Big Ideas about Time and Space”, Picnic Day, Davis, CA, April 2005.

“The Origin of the Universe”, Explorit Science Cener, Davis, CA, October 2004.

“Earth and Mars in the Cosmic Context”, Placer Nature Center, Auburn, CA, August 2003.

“Exploring the Large-Scale Structure of Time and Space”, Davis Star Show, August, 2001.

“The Big Bang”, COSMOS summer program for high school students, Davis, CA, August, 2001.

“The Large-Scale Structure of Space-Time”, Chicago Astronomical Society, Adler Planetarium, May 1999.

“The Big Bang”, University of Toronto Astronomy Department Public Tour, March 1998.

“The Big Bang Did Too Happen”, Royal Astronomical Society of Toronto, September 1996.

Professional Service

CMB-S4 Concept Definition Task Force Advisory Board
(One of four members, 2016-2017)

Department of Energy Review of National Laboratory Cosmic Frontier Programs
(Review Panel Member July 2016)

DESI CD-1 Review
(Panel Member September 2014)

Director’s Review of DESI
(Panel Member November 2013)

Executive Committee of the Division of Astrophysics of the American Physical Society
(Member, April 2013 to April 2015)

External Reviewer for Cosmology at Los Alamos National Laboratory March 2008

Dark Energy Task Force (Member, 2005-2006)

NASA/Planck Internal Advisory Board
(Member, January 2004 to September 2005. Chair, September 2005 to September 2007)

Teaching

From Assistant to Full Professor, University of California at Davis

Upper division course, “General Relativity”, Winter 2016

First year graduate course, “Electrodynamics”, Spring 2015

Upper division course, “Cosmology”, Winter 2013, Winter 2015, Winter 2017

Advanced graduate course, “Early Universe Cosmology”, Winter 2011

Undergraduate course, “Physics 7B”, Spring 2010

Undergraduate course, “Alumni Seminar Series”, Spring 2007-2014

First year graduate course, “Classical Mechanics”, Fall 2006-2015, 2017-2018

Upper division course, “Astrophysical Applications”, Spring 2004-2006, 2008, 2010

Advanced graduate course, “Evolution of Large-Scale Structure”, Spring 2001, Fall 2002,
Spring 2004-2006, 2008-2009, 2011, 2013, 2015, 2017

General Education course, “Astronomy 10”, Winter 2004, Spring 2009

Upper division course, “Introduction to Modern Astrophysics”, Spring 2003 & Winter 2005

Upper division course, “Introduction to Modern Astrophysics”, Spring 2002

Advanced graduate course, “Inflation and Dark Energy”, Winter 2002

General education course, “Astro 10”, Fall 2001

A project-based course open to upper division, graduate, and professional students across the university
“Pathways to Climate Neutrality in California”, Fall 2016, Winter 2018

Volunteer Instructor, Osher Lifelong Learning Institute

Taught a course with two two-hour meetings, “Modern Cosmology”, Fall 2013.

Workshop Leader, Science in the River City Program

Led workshop on teaching cosmology at the high school level for high school science teachers.
Spring 2007 and Fall 2007.

Volunteer Instructor, University of Toronto

Taught eight lecture course, “Evolution of Fluctuations” to graduate students.

Teaching Assistant, University of Chicago

Intermediate Mechanics and Statistical Mechanics (1990-1991)

Intermediate Mechanics (Fall 1991)

Natural Sciences 101 (Fall 1992)

Natural Sciences 101 (Fall 1993)

Seminar Leader

Created and taught the two week seminar, “Light and Our Universe” for three sessions of the University of Virginia Summer Enrichment Program (1990).

Students were 9 to 13 years old.

Mentoring

Senior Theses

Roderic Vanderscoff (2014), “Reconciling Our Perception of Reality with Quantum Mechanics”

Undergraduate Researchers

Mackenzie Joy (2018), Moutaz Haq (2018), Brigid Mulroe (2015),

Lachlan Lancaster (2015), Praful Gagrani (2014),

Jennet Dickinson (2013), John J. Zanazzi (2012), David Gribble (2010),

Justin Smith (2010), William Gaggioli (2005), Michael Quilici (2005), Alexandra Lampert (2004),

Lee Chandler (2003), Orpheus Mall (2003), Rachelle Richmond (2003), Dana Nuccitelli (2002),

Gabriel Proctor (2001), Michael Segal (1997), and Michael Gladders (1996)

Former Graduate Student Thesis Advisees

Zhen Pan (Ph.D. 2018, Zel’dovich Fellow at the Perimeter Institute) Brent Follin (Ph.D. 2017, Wise.io) Marius

Michael Schneider (Ph.D. 2009, staff position at Lawrence Livermore National Laboratory)

Jason Dick (Ph.D. 2007, Google, New York, New York)

Iwen Mike Chu (Ph.D. 2005)

Yong-Seon Song (Ph.D. 2004, Professor at KIAS)

Alan Peel (Ph. D. 2003, Lecturer at University of Maryland)

Current Graduate Student Thesis Advisees

Robert Knight (Ph.D expected 2018)

Kevin Aylor (Ph.D expected 2019)

Former Postdoctoral Researchers

Zhen Hou (2010-2013, postdoc at University of Chicago)

Hu Zhan (2004 – 2007, Professor at National Astronomical Observatories of China)

Manoj Kaplinghat (Fall 2001 – Summer 2004, now Professor at UC Irvine)

Mario Santos (Fall 2002 – Winter 2005, faculty at University of Western Cape, S.A.)

Jean-Baptiste Melin (Winter 2005 – Fall 2006, permanent staff position at CEA in Saclay, France)