

DOUGLAS P. FINKBEINER

ADDRESS Harvard-Smithsonian Center for Astrophysics November, 2014
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PERSONAL Born 31 March, 1971, US citizen, married

EDUCATION Ph.D., Physics, University of California at Berkeley, 1999 (Uhl Thesis Award)
M.A., Physics, University of California at Berkeley, 1996
B.S., Physics and German, University of Michigan, 1994 (with highest honors)

POSITIONS

Harvard University (joint appointment in Astronomy and Physics Departments)

Position: Full Professor July, 2013 – present

Position: Associate Professor July, 2010 – June, 2013

Position: Assistant Professor July, 2006 – June, 2010

Princeton University, Dept. Astrophysical Sciences; July, 2001 – June, 2006

Position: Hubble Fellow (through June, 2003), Russell-Cotsen Fellow (starting July, 2003)

University of California, Berkeley; May, 1999 – June, 2001

Position: Postdoc (NASA ADP); Hubble Fellow, July, 2000 - June, 2001

RESEARCH INTERESTS

- High-energy astrophysics, AGN feedback, e.g. the “*Fermi* bubbles” and jets
- Observable consequences of dark matter annihilation in γ -rays, cosmic rays, and microwaves
- Galactic structure in 2D and 3D; interstellar dust and ionized gas as CMB foregrounds
- Large-scale structure, large photometric and redshift surveys (SDSS, DEEP2, Pan-STARRS)

OBSERVING EXPERIENCE

- Extensive experience with satellite data from *Fermi*, WISE, WMAP, COBE and IRAS
- Optical photometry and spectroscopy (DECam, Keck/DEIMOS, SDSS, PS1)
- Radio continuum observations (Green Bank, VLA)
- Member of DEEP2, SDSS, Pan-STARRS 1, and DECam Legacy surveys

AWARDS and FELLOWSHIPS

- 2014 Bruno Rossi Prize for High Energy Astrophysics, shared with Meng Su and Tracy R. Slatyer
- 2005 Charles H. Townes Symposium Award (\$10,000 prize)
- 2003-06 Cotsen Fellowship, Princeton Society of Fellows
- 2003-06 Henry Norris Russell Fellowship
- 2000-03 Hubble Postdoctoral Fellowship
- 1999 Uhl Award – UC Berkeley – for Ph.D. Thesis Research
- 1994-97 NSF Graduate Fellowship

SERVICE

- Co-organizer of Sackler Symposium on Dark Matter, Harvard, 2014
- Astro2010 Decadal Survey: Program Prioritization Panel on Particle Astrophysics and Gravitation
- NASA review panels (ADAP, Theory)
- NSF review panels
- Co-organizer of “Direct, Indirect and Collider Signals of Dark Matter,” KITP Santa Barbara, 2009
(with Arkani-Hamed & Weiner)
- Co-organizer of “Searching for Dark Matter: A Unified Approach,” Radcliffe, 2009
(with Stubbs, Gaitskell, & Fisher)

RESEARCH GRANTS

- 9/2013 - 8/2016 “Mapping Dust in 3-D with Pan-STARRS”
NSF/AST (PI): \$316,900
- 1/2012 - 1/2015 “A higher resolution Galactic Dust Map: Mapping Galactic Dust with WISE”
NASA/ADAP (PI): \$289,000
- 8/2011 - 7/2012 “Fermi Bubbles: Improved Spectral and Morphological Measurements”
Fermi Cycle 4 GI (PI): \$88,000
- 1/2010 - 12/2013 “A New Galactic Dust Map”
NASA/ADAP (PI): \$288,000
- 1/2010 - 12/2014 “Astrophysical Consequences of a New Force in the Dark Sector”
NASA/Theory (PI): \$288,000
- 7/2003 - 2/2009 “Exploring the ISM with MAP: The Microwave Emission from Spinning Dust”
NASA/LTSA 02-0058-0036 (PI): \$480,000

Including my Hubble fellowship and support during graduate studies, I have enjoyed NASA support almost continuously since 1995.

ADVISEES

- Postdocs:
 - Gregory Dobler (now at CUSP, NYU)
 - Mario Jurić (Professor, U. Washington)
 - Molly Swanson (NSF Fellow)
- Graduate students:
 - Tracy R. Slatyer (2010) Professor, MIT
 - Edward F. Schlafly (2012) Max Planck Institute for Astronomy, Heidelberg
 - Tongyan Lin (2012) Kavli Institute for Cosmological Physics, Chicago
 - Meng Su (2012) Einstein Fellow / Pappalardo Fellow, MIT
 - Aaron Meisner (expected 2015)
 - Greg Green (expected 2016)
 - Albert Lee (expected 2017)
 - Stephen Portillo (expected 2017)
 - Tansu Daylan (expected 2018)
- Undergraduates: Sarah Satinover, Dan D’Orazio (Columbia), Lauren Weiss (UC Berkeley), David Rosengarten (Princeton), William Hawley, Duncan Watts (Johns Hopkins), Caroline Huang (Johns Hopkins)

TEACHING EXPERIENCE

- 2014 Spring - Ast. 130, Cosmology (undergrad)
- 2013 Fall - Ast. 98, Junior tutorial
- 2013 Spring - Ast. 98, Junior tutorial
- 2012 Spring - Ast. 130, Cosmology (undergrad)
- 2011 Spring - Ast. 16, Introduction to Stellar and Planetary Astronomy
- 2010 Spring - Ast. 130, Cosmology
- 2009 Spring - Ast. 201b, Interstellar Medium (graduate)
- 2008 Spring - Ast. 192, Principles of Astronomical Measurement
- 2007 Spring - Ast. 16, Introduction to Stellar and Planetary Astronomy
- 2004 Fall - Ast. 302, Stellar Structure and Evolution (Princeton, assisting Goodman)
- 2003 Fall - Ast. 205, The Search for Planets (Princeton, assisting Turner, Spergel, & Knapp)
- 2000 Fall - Astronomical Data Analysis (UC Berkeley, jointly with Heiles)

EDUCATION / OUTREACH

- Prominently featured in Unit 10 (dark matter) of *Physics for the 21st Century*, an 11-unit video course in modern physics for high school and college students. Produced in 2010 by Annenberg Learner, part of the Annenberg Foundation. (www.learner.org/courses/physics)
- Guest blogger for Discover Magazine's *Cosmic Variance*

SELECTED PAPERS

Over the last 17 years, I have co-authored more than 100 refereed articles. I consider these to be the most important:

1. *Strong Evidence for Gamma-ray Line Emission from the Inner Galaxy*, Meng Su, & **D. P. Finkbeiner** 2012, arXiv:1206.1616
Presents “strong evidence” (6.5σ local significance) of 130 GeV photons from the Galactic center. This expands on previous work by 1. extracting the signal via spatial template fitting, 2. showing the fit marginally prefers a double line, and 3. finding the signal is slightly off center. If correct, this signal likely originates from annihilating dark matter.
2. *Giant Gamma-ray Bubbles from Fermi-LAT: AGN Activity or Bipolar Galactic Wind?* Meng Su, T. R. Slatyer, & **D. P. Finkbeiner** 2010, ApJ, 724, 1044, arXiv:1005.5480
We describe the discovery of a bilobular structure extending ± 8 kpc above the Galactic center in the *Fermi* gamma-ray data at 1-100 GeV. These “bubbles” have a hard spectrum and sharp edges, and they are likely the relic of past AGN activity.
3. *A Theory of Dark Matter*, N. Arkani-Hamed, **D. P. Finkbeiner**, T. R. Slatyer, & Neal Weiner 2009, Phys. Rev. D , 79, 015014, arXiv:0810.0713
We propose that a new force in the dark sector causes WIMPs to have a high annihilation cross section (via “Sommerfeld enhancement”) to light leptons, providing a source for recent cosmic-ray and gamma-ray signals. This is the second-most cited paper of 2008 in theoretical physics (SPIRES) and spawned dozens of papers on Sommerfeld-enhanced dark matter in 2009.
4. *Exciting Dark Matter and the INTEGRAL/SPI 511 keV Signal*, **D. P. Finkbeiner** & Neal Weiner 2007, Phys. Rev. D , 76, 083519, and astro-ph/0702587
In my first collaborative project with a theoretical particle physicist, we propose a model of dark matter with excited states and explore the far-reaching consequences of WIMP-WIMP inelastic scattering for astrophysics and particle physics.
5. *Microwave ISM Emission in the Green Bank Galactic Plane Survey: Evidence for Spinning Dust*, **D. P. Finkbeiner**, G. I. Langston, & A. H. Minter 2004, ApJ, 617, 350, and astro-ph/0408292
Presents strong evidence for microwave dipole emission from spinning dust grains, ruling out the “dust-correlated synchrotron” hypothesis of the WMAP team. This was a key step in establishing a new continuum emission mechanism in the ISM.
6. *Microwave ISM Emission Observed by WMAP*, **D. P. Finkbeiner** 2004, ApJ, 614, 186, and astro-ph/0311547
“WMAP haze” discovery paper, leading to later papers proposing synchrotron emission from dark matter annihilation products in the inner Galaxy as the source. This emission is now associated (mostly) with the Fermi bubbles.
7. *Extrapolation of Galactic Dust Emission at 100 Microns to CMBR Frequencies Using FIRAS*, **D. P. Finkbeiner**, Marc Davis, & D. J. Schlegel 1999, ApJ, 524, 867
The standard reference for microwave dust emission, almost universally used in microwave background analyses.
8. *Maps of Dust IR Emission for Use in Estimation of Reddening and CMBR Foregrounds*, D. J. Schlegel, **D. P. Finkbeiner**, & Marc Davis 1998, ApJ, 500, 525
The “SFD” dust map is the most widely used map of Galactic extinction and the most cited refereed article in astronomy (ADS).

REFEREED PUBLICATIONS

Astroparticle Physics / High Energy Astrophysics

- “Is the 130 GeV Line Real? A Search for Systematics in the Fermi-LAT Data,”
D. P. Finkbeiner, Meng Su, & C. Weniger 2013, JCAP, 1, 29
- “Double Gamma-ray Lines from Unassociated Fermi-LAT Sources,”
Meng Su & **D. P. Finkbeiner** 2012, arXiv:1207.7060
- “Strong Evidence for Gamma-ray Line Emission from the Inner Galaxy,”
Meng Su & **D. P. Finkbeiner** 2012, arXiv:1206.1616
- “Evidence for Gamma-Ray Jets in the Milky Way,”
Meng Su & **D. P. Finkbeiner** 2012, ApJ 753, 61
- “Consistent Scenarios for Cosmic-Ray Excesses from Sommerfeld-Enhanced Dark Matter Annihilation,” **D. P. Finkbeiner**, L. Goodenough, T. R. Slatyer, M. Vogelsberger, & N. Weiner 2011, JCAP 05, 002
- “Magnetic Inelastic Dark Matter: Directional Signals Without a Directional Detector,”
Tongyan Lin & **D. P. Finkbeiner** 2011, Phys. Rev. D 83, 083510
- “Giant Gamma-ray Bubbles from Fermi-LAT: AGN Activity or Bipolar Galactic Wind?”
Meng Su, T. R. Slatyer & **D. P. Finkbeiner** 2010, ApJ 724, 1044
- “The Electron Injection Spectrum Determined by Anomalous Excesses in Cosmic Ray, Gamma Ray, and Microwave Signals,”
Tongyan Lin, **D. P. Finkbeiner**, & G. Dobler 2010, Phys. Rev. D 82, 023518
- “The Fermi Haze: A Gamma-Ray Counterpart to the Microwave Haze,”
G. Dobler, **D. P. Finkbeiner**, I. Cholis, T. R. Slatyer, & N. Weiner 2009, ApJ 717, 825
- “A Statistical Test of Emission from Unresolved Point Sources,”
T. R. Slatyer & **D. P. Finkbeiner** 2009, MNRAS 405, 1777
- “CMB Constraints on WIMP Annihilation: Energy Absorption During the Recombination Epoch,” T. R. Slatyer, N. Padmanabhan, & **D. P. Finkbeiner** 2009, Phys. Rev. D 80, 043526
- “Inelastic Dark Matter and DAMA/LIBRA: An Experimentum Crucis,”
D. P. Finkbeiner, Tongyan Lin, & N. Weiner 2009, Phys. Rev. D 80, 115008
- “PAMELA, DAMA, INTEGRAL and Signatures of Metastable Excited WIMPs,”
D. P. Finkbeiner, T. R. Slatyer, N. Weiner, & I. Yavin 2009, JCAP 0909, 037
- “The Case for a 700+ GeV WIMP: Cosmic Ray Spectra from ATIC and PAMELA,”
I. Cholis, G. Dobler, **D. P. Finkbeiner**, L. Goodenough, & N. Weiner 2008, Phys. Rev. D 80, 123518
- “The PAMELA Positron Excess from Annihilations into a Light Boson,”
I. Cholis, **D. P. Finkbeiner**, L. Goodenough, & N. Weiner 2008, JCAP 0912, 007
- “Nuclear Scattering of Dark Matter Coupled to a New Light Scalar,”
D. P. Finkbeiner, T. R. Slatyer, & N. Weiner 2008, Phys. Rev. D 78, 116006
- “A Theory of Dark Matter,” N. Arkani-Hamed, **D. P. Finkbeiner**, T. R. Slatyer, & Neal Weiner 2009, Phys. Rev. D 79, 015014
- “CMB and 21-cm Signals for Dark Matter with a Long-Lived Excited State,”
D. P. Finkbeiner, N. Padmanabhan, & N. Weiner 2008, Phys. Rev. D 78, 063530

- “Prospects for Detecting Dark Matter with GLAST in Light of the WMAP Haze,”
D. Hooper, G. Zaharijas, **D. P. Finkbeiner**, & G. Dobler 2007, Phys. Rev. D 77, 043511
- “Possible Evidence for Dark Matter Annihilations from the Excess Microwave Emission Around the Center of the Galaxy Seen by WMAP,”
D. Hooper, **D. P. Finkbeiner**, & G. Dobler 2007, Phys. Rev. D 76, 083012
- “Exciting Dark Matter and the INTEGRAL/SPI 511 keV Signal,”
D. P. Finkbeiner & Neal Weiner 2007, Phys. Rev. D 76, 083519
- “Detecting Dark Matter Annihilation with CMB Polarization: Signatures and Experimental Prospects,” N. Padmanabhan & **D. P. Finkbeiner** 2005, Phys. Rev. D 72, 023508

ISM / Cosmology Research

- “A Large Catalog of Accurate Distances to Molecular Clouds from PS1 Photometry,” Schlafly, E. F., et al. 2014, ApJ 786, 29
- “Perseus I: A Distant Satellite Dwarf Galaxy of Andromeda,” Martin, N. et al. 2013, ApJ 779, 10
- “A Map of Dust Reddening to 4.5 kpc from Pan-STARRS1,” Schlafly, E. F., et al. 2014, ApJ 789, 15
- “Sharper Fermi LAT Images: Instrument Response Functions for an Improved Event Selection,” Portillo, S. K. N. & Finkbeiner, Douglas P. 2014, ApJ 796, 54
- “A Full-sky, High-resolution Atlas of Galactic 12 μ m Dust Emission with WISE,” Meisner, A. M. & Finkbeiner, D. P. 2014, ApJ 781, 5
- “Measuring Distances and Reddenings for a Billion Stars: Toward a 3D Dust Map from Pan-STARRS 1,” Green, G. M. et al. 2014, ApJ 783, 114
- “A Pan-STARRS1 View of the Bifurcated Sagittarius Stream,”
Slater, C. T., et al. 2013, ApJ 762, 6
- “Lacerta I and Cassiopeia III. Two Luminous and Distant Andromeda Satellite Dwarf Galaxies Found in the 3π Pan-STARRS1 Survey,” Martin, N. et al., ApJ 772, 15
- “The Pan-STARRS 1 Photometric Reference Ladder, Release 12.01,”
Magnier, E. A., et al. 2013, ApJS, 205, 20
- “Photometric Calibration of the First 1.5 Years of the Pan-STARRS 1 Survey,”
E. F. Schlafly, **D. P. Finkbeiner**, M. Jurić, E. A. Magnier, et al. 2012, ApJ 756, 158
- “The Metallicity of the Monoceros Stream,”
A. Meisner, A. Frebel, M. Jurić, & **D. P. Finkbeiner** 2012, ApJ, 753, 116
- “Searching for Dark Matter in the CMB: A Compact Parameterization of Energy Injection from New Physics,”
D. P. Finkbeiner, S. Galli, Tongyan Lin, & T. R. Slatyer 2012, Phys. Rev. D 85, 043522
- “Measuring Reddening with SDSS Stellar Spectra and Recalibrating SFD,”
E. F. Schlafly & **D. P. Finkbeiner** 2011, ApJ, 737, 103
- “The Blue Tip of the Stellar Locus: Measuring Reddening with the SDSS,”
E. F. Schlafly, **D. P. Finkbeiner**, D. J. Schlegel, M. Jurić, et al. 2010, ApJ 725, 1175
- “A Limit on the Polarized Anomalous Microwave Emission of Lynds 1622,”
B. S. Mason, T. Robishaw, C. Heiles, **D. P. Finkbeiner**, & C. Dickinson 2009, ApJ, 697, 1187

- “Constraining Spinning Dust Parameters with the WMAP Five-Year Data,” G. Dobler, B. T. Draine, & **D. P. Finkbeiner** 2009, ApJ, 699, 1374
- “Identification of Spinning Dust in H α -correlated Microwave Emission,” G. Dobler & **D. P. Finkbeiner** 2008, ApJ, 680, 1235
- “Extended Anomalous Foreground Emission in the WMAP 3-Year Data,” G. Dobler & **D. P. Finkbeiner** 2008, ApJ, 680, 1222
- “Modeling the Dust Properties of $z \sim 6$ Quasars with ART²-All-Wavelength Radiative Transfer with Adaptive Refinement Tree,” Y. Li et al. 2008, ApJ, 678, 41
- “The Effect of FIR Emission from SDSS Galaxies on the SFD Galactic Extinction Map,” Kazuhiro Yahata, et al. 2007, PASJ, 59, 205
- “Sloan Digital Sky Survey Imaging of Low Galactic Latitude Fields: Technical Summary and Data Release,” **D. P. Finkbeiner**, et al. 2004, AJ, 128, 2577
- “Microwave ISM Emission in the Green Bank Galactic Plane Survey: Evidence for Spinning Dust,” **D. P. Finkbeiner**, G. I. Langston, & A. H. Minter 2004, ApJ, 617, 350
- “Microwave ISM Emission Observed by *WMAP*,” **D. P. Finkbeiner** 2004, ApJ, 614, 186
- “Determining Foreground Contamination in CMB Observations: Diffuse Galactic Emission in the MAXIMA-I Field,” A. H. Jaffe, et al. 2004, ApJ 615, 55
- “A Full-Sky H-alpha Template for Microwave Foreground Prediction,” **D. P. Finkbeiner** 2003, ApJS, 146, 407
- “Tentative Detection of Electric Dipole Emission from Rapidly Rotating Dust Grains,” **D. P. Finkbeiner**, D. J. Schlegel, Curtis Frank, & Carl Heiles 2002, ApJ, 566, 898
- “A New Spin on Galactic Dust,” A. de Oliveira-Costa, M. Tegmark, **D. P. Finkbeiner**, R. D. Davies, C. M. Gutierrez, L. M. Haffner, A. W. Jones, A. N. Lasenby, R. Rebolo, R. J. Reynolds, S. L. Tufte, and R. A. Watson 2002, ApJ, 567, 363
- “Detection of a Far IR Excess with DIRBE at 60 and 100 Microns,” **D. P. Finkbeiner**, Marc Davis, & D. J. Schlegel 2000, ApJ, 544, 81
- “Extrapolation of Galactic Dust Emission at 100 Microns to CMBR Frequencies Using FIRAS,” **D. P. Finkbeiner**, Marc Davis, & D. J. Schlegel 1999, ApJ, 524, 867
- “Maps of Dust IR Emission for Use in Estimation of Reddening and CMBR Foregrounds,” D. J. Schlegel, **D. P. Finkbeiner**, & Marc Davis 1998, ApJ, 500, 525
- “The Origin of the Galactic 1/4 keV Diffuse X-Ray Background,” S. L. Snowden, R. Egger, **D. P. Finkbeiner**, M. J. Freyberg, P. P. Plucinsky, & W. T. Sanders 1998, ApJ, 493, 715

DEEP2 / DEIMOS Publications

- “The DEEP2 Galaxy Redshift Survey: Design, Observations, Data Reduction, and Redshifts,” J. A. Newman et al. 2013, ApJS, 208, 5
- “Galaxy Luminosity Functions to $z \sim 1$ from DEEP2 and COMBO-17: Implications for Red Galaxy Formation,” Sandra M. Faber, et al. 2007, ApJ, 665, 265

- “The DEEP2 Galaxy Redshift Survey: The Galaxy Luminosity Function to $z \sim 1$,”
Chris Willmer, et al. 2006, ApJ, 647, 853
- “The DEEP2 Galaxy Redshift Survey: the Relationship Between Galaxy Properties and Environment at $z \sim 1$,”
Michael Cooper, et al. 2006, MNRAS, 370, 198
- “The DEEP2 Galaxy Redshift Survey: First Results on Galaxy Groups,”
Brian F. Gerke et al. 2005, ApJ, 625, 6
- “The DEEP2 Galaxy Redshift Survey: Clustering of Galaxies in Early Data,”
Alison Coil, et al. 2004, ApJ, 609, 525
- “The DEEP2 Galaxy Redshift Survey: Spectral Classification of Galaxies at $z \sim 1$,”
Darren Madgwick, et al. 2003, ApJ, 599, 997

SDSS Publications

- “Milky Way Tomography with SDSS IV: Dissecting Dust,”
M. Berry et al. 2012, arXiv:1111.4985
- “The Milky Way Tomography with SDSS. III. Stellar Kinematics,”
Nicolas Bond et al. 2010, ApJ 716, 1
- “Discovery of a Wide Binary Brown Dwarf Born in Isolation,”
K. L. Luhman, E. E. Mamajek, P. R. Allen, A. A. Muench, & **D. P. Finkbeiner** 2009, ApJ, 691, 1265
- “The Milky Way Tomography with SDSS. II. Stellar Metallicity,”
Željko Ivezić, et al. 2008, ApJ, 684, 287
- “The Milky Way Tomography with SDSS. I. Stellar Number Density Distribution,”
Mario Jurić, et al. 2008, ApJ, 673, 864
- “Sloan Digital Sky Survey Standard Star Catalog for Stripe 82: The Dawn of Industrial 1% Optical Photometry,”
Željko Ivezić, et al. 2007, AJ, 134, 973
- “Stellar SEDs from 0.3-2.5 Microns: Tracing the Stellar Locus and Searching for Color Outliers in SDSS and 2MASS,”
Kevin Covey, et al. 2007, AJ 134, 2398
- “Exploring the Variable Sky with the Sloan Digital Sky Survey,”
Branimir Sesar, et al. 2007, AJ, 134, 2236
- SDSS Publication 754: “An Improved Photometric Calibration of the Sloan Digital Sky Survey Imaging Data,”
Nikhil Padmanabhan, D. J. Schlegel, **D. P. Finkbeiner**, et al. 2008, ApJ, 674, 1217
- SDSS Publication 671: “Cosmological Constraints from the SDSS Luminous Red Galaxies,”
Max Tegmark, et al. 2006, Phys. Rev. D 74, 123507
- SDSS Publication 636: “The Clustering of Luminous Red Galaxies in the Sloan Digital Sky Survey Imaging Data,”
Nikhil Padmanabhan, et al. 2007, MNRAS, 378, 852
- SDSS Publication 479: “Panchromatic Properties of 99,000 Galaxies Detected by SDSS, and (some by) ROSAT, GALEX, 2MASS, IRAS, GB6, FIRST, NVSS and WENSS Surveys,”
Mirela Obric, et al. 2006, MNRAS, 370, 1677

- SDSS Publication 350: “Variable Faint Optical Sources Discovered by Comparing the POSS and SDSS Catalogs,”
Branimir Sesar, et al. 2006, AJ, 131, 2801
- SDSS Publication 502: “SDSS J103913.70+533029.7: A Super Star Cluster in the Outskirts of a Galaxy Merger,”
Gillian Knapp, et al. 2006, AJ, 131, 859
- SDSS Publication 516: “The Sloan Digital Sky Survey Monitor Telescope Pipeline,”
Douglas L. Tucker, et al. 2006, Astr. Nachrichten, 327, 821
- SDSS Publication 428: “Anomalously Low PAH Emission from Low-Luminosity Galaxies,”
David W. Hogg, et al. 2005, ApJ, 624, 162
- SDSS Publication 398: “SDSS Data Management and Photometric Quality Assessment,”
Željko Ivezić, et al. 2004, Astr. Nachrichten, 325, 583
- SDSS Publication 424: “NYU-VAGC: a galaxy catalog based on new public surveys,”
Michael R. Blanton, et al. 2005, AJ, 129, 2562
- SDSS Publication 403: “The V1647 Ori (IRAS 05436-0007) Protostar and its Environment,”
Peregrine M. McGehee, et al. 2004, ApJ, 616, 1058
- SDSS Publication 310: “Cosmological Parameters from SDSS and *WMAP*,”
Max Tegmark et al. 2004, Phys. Rev. D 69, 103501
- SDSS Publication 234: “The 3D Power Spectrum of Galaxies from the SDSS,”
Max Tegmark, et al. 2004, ApJ, 606, 702
- SDSS Publication 289: “Near Infrared Photometry and Spectroscopy of L and T dwarfs: the Effects of Temperature, Clouds and Gravity,” Gillian Knapp et al. 2004, AJ, 127, 3553
- SDSS Publication 177: “The Velocity Dispersion Function of Early-Type Galaxies,”
Ravi K. Sheth, et al. 2003, ApJ, 594, 225
- SDSS Publication 110a: “Early-Type Galaxies in the Sloan Digital Sky Survey. I. The Sample,”
Mariangela Bernardi, et al. 2003, AJ, 125, 1817
- SDSS Publication 110b: “Early-type Galaxies in the Sloan Digital Sky Survey. II. Correlations between Observables,” Mariangela Bernardi, et al. 2003, AJ, 125, 1849
- SDSS Publication 110c: “Early-Type Galaxies in the Sloan Digital Sky Survey. III. The Fundamental Plane,” Mariangela Bernardi, et al. 2003, AJ, 125, 1866
- SDSS Publication 110d: “Early-Type Galaxies in the Sloan Digital Sky Survey. IV. Colors and Chemical Evolution,” Mariangela Bernardi, et al. 2003, AJ, 125, 1882
- SDSS Publication 183: “Average Spectra of Massive Galaxies in the SDSS,”
Daniel J. Eisenstein, et al. 2003, ApJ, 585, 694
- SDSS Publication 133: “Optical and Radio Properties of Extragalactic Sources Observed by the FIRST Survey and SDSS,” Željko Ivezić, et al. 2002, AJ, 124, 2364
- SDSS Publication 95: “Galaxy Clustering in Early Sloan Digital Sky Survey Redshift Data,”
Idit Zehavi, et al. 2002, ApJ, 571, 172
- SDSS Publication 82: “A Photometricity and Extinction Monitor at the Apache Point Observatory,” David W. Hogg, **D. P. Finkbeiner**, David Schlegel & James E. Gunn, 2001, AJ, 122, 2129, astro-ph/0106511

- SDSS Publication 73: “Composite Quasar Spectra from the SDSS,” Daniel Vanden Berk, et al. 2001, AJ, 122, 549
- SDSS Publication 55: “Colors of 2625 Quasars at $0 < z < 5$ Measured in the Sloan Digital Sky Survey Photometric System,” Gordon T. Richards, et al. 2001, AJ, 121, 2308
- SDSS Publication 54: “The Luminosity Function of Galaxies in SDSS Commissioning Data,” Michael Blanton, et al. 2001, AJ, 121, 2358
- Plus six SDSS data release papers

INVITED REVIEWS

- “Microwave Emission from Aligned Dust,”
A. Lazarian & **D. P. Finkbeiner** 2003, proceedings of “The Cosmic Microwave Background and its Polarization,” *New Astronomy Reviews*, (eds. S. Hanany and K. A. Olive)
- “Interstellar Dust Emission as a CMBR Foreground,”
D. P. Finkbeiner & D. J. Schlegel 1999 in “Microwave Foregrounds”, eds. A. de Oliveira-Costa & M. Tegmark (ASP, San Francisco, 1999)

WHITE PAPERS

- “The Case for a Directional Dark Matter Detector and the Status of Current Experimental Efforts,” Ahlen et al. 2009, arXiv:0911.0323
- “The Origin of the Universe as Revealed Through the Polarization of the Cosmic Microwave Background,”
S. Dodelson et al. 2009, arXiv:0902.3796
- “Strong Gravitational Lensing Probes of the Particle Nature of Dark Matter,”
L. Moustakas et al. 2009, arXiv:0902.3219
- “CMBPol Mission Concept Study: Prospects for Polarized Foreground Removal,”
J. Dunkley et al. 2008, arXiv:0811.3915

STATISTICS (from the Astrophysics Data System)

100 refereed papers, 32,000 citations, h index = 61

94 refereed papers, 27,600 citations, h index = 55 (excluding the six SDSS data release papers)

POPULAR PRESS

The “Fermi bubbles” press release (via NASA, 11/2010) was picked up by over 150 major newspapers around the world. It was featured on TV from CNN to CCTV (China). The 90 second video prepared by the press team at Goddard was viewed nearly 150,000 times in the first week.

See links at <http://nebel.rc.fas.harvard.edu/dfink/homepage/pr/>

Previous projects have occasionally received press coverage:

- *Is Fermi Seeing Dark Matter?* Sky & Telescope, 10/28/2009
- *Findings on Mysterious Haze at Galaxy’s Center*, The New York Times, 10/30/2009
- *Emission Impossible?: Is Dark Matter Behind the Hazy Radiation at the Milky Way’s Center?* Scientific American, 11/3/2009
- *A Whisper, Perhaps, From the Universe’s Dark Side*, The New York Times, (Science Times front page) 11/24/2008
- *New Theories May Shed Light on Dark Matter*, Scientific American, 11/10/2008
- *The Not-So-Dark matter: How dark matter might emit detectable energy*, Scientific American, April 2007
- *A hazy view of dark matter*, Astronomy Magazine, 10/24/2004
- *Milky Way’s radiation shows up a dark centre*, New Scientist, 10/2004, p. 11
- *Swirling dust*, Scientific American, January 2002, p. 23
- *Interstellar dust: Spinning around*, The Economist, 11/17/2001, p. 74
- *Piercing the haze*, New Scientist, 11/17/2001, p. 11

SELECTED PREVIOUS TALKS

- 10/2014 Carnegie Observatories, lunch talk on calibration
- 10/2014 Cosmology on Scales Small and Large (Gruber), Yale
- 9/2014 Physics of the Universe (POTUS), NYC
- 9/2014 IAU 313, Galapagos, Extragalactic Jets from every angle
- 8/2014 SLAC Summer Institute on dark matter
- 7/2014 Calibration of GAIA and other surveys, Ringberg
- 7/2014 MPIA Heidelberg
- 6/2014 6-D Galactic radiation field, TeVPA/IDM, Amsterdam
- 6/2014 Dust and calibration, PS1 meeting at STScI
- 6/2014 AAS Boston
- 5/2014 KICP colloquium, University of Chicago
- 4/2014 Calistoga workshop
- 1/2014 AAS Washington, DC
- 11/2013 National Central University, Taiwan, Colloquium
- 11/2013 Pan-STARRS 1 Science Consortium Meeting, Taiwan
- 10/2013 The Dark Matter Paradigm, PCTS, Princeton University
- 10/2013 IAU 303 Santa Fe Galactic Center meeting
- 10/2013 Einstein Fellows Symposium, Keynote
- 9/2013 NYU Dark matter meeting
- 7/2013 Max Planck Institute for Astrophysics seminar
- 6/2013 IPMU, Tokyo, Japan
- 6/2013 CMB2013 - Cosmic Microwave Background, Okinawa, Japan
- 5/2013 Lecturer, Fermi Summer School, Lewes, DE
- 5/2013 KITP Santa Barbara Dark Matter conference
- 4/2013 Lawrence Berkeley National Laboratory RPM talk
- 4/2013 UC Berkeley Colloquium
- 4/2013 Monterey AAS High Energy Astrophysics Division meeting
- 3/2013 Pan-STARRS 1 Science Consortium Meeting, Manoa, HI
- 1/2013 AAS Long Beach
- 12/2012 UC Berkeley seminar
- 11/2012 UNC Chapel Hill colloquium
- 11/2012 STScI seminar
- 11/2012 NASA Goddard Space Flight Center Scientific Colloquium
- 10/2012 Fermi Symposium, Monterey, CA
- 10/2012 Stanford SITP seminar
- 10/2012 panelist, Sackler Colloquium on Dark Matter, NAS, Irvine
- 10/2012 Brown University colloquium
- 10/2012 Stony Brook colloquium
- 9/2012 Princeton IAS seminar
- 9/2012 MIT colloquium

- 9/2012 Boston University colloquium
- 8/2012 Pan-STARRS 1 Science Consortium meeting, Durham, UK
- 8/2012 Durham University Physics special seminar, UK
- 8/2012 Cambridge University, IoA, UK
- 7/2012 seminar, Princeton University Astronomy
- 7/2012 Identification of Dark Matter Conference, Chicago
- 7/2012 seminar, Max-Planck Institute for Astrophysics, Garching
- 7/2012 Gamma 2012 conference, Heidelberg
- 5/2012 Stanford astro tea talk
- 1/2012 Pan-STARRS 1 Science Consortium meeting, Hawaii
- 11/2011 UT Austin colloquium
- 11/2011 JPL seminar
- 10/2011 Galactic Center workshop, MPA, Heidelberg
- 10/2011 Keynote at SLAC Dark Matter with Gamma-rays workshop
- 9/2011 Perimeter Institute
- 9/2011 Yale YCAA seminar
- 7/2011 CERN particle physics colloquium
- 6/2011 Oxford University particle physics colloquium
- 5/2011 AAS meeting, Boston
- 5/2011 Space Telescope Science Institute May meeting (dark matter)
- 2/2011 UC Berkeley astro colloquium
- 2/2011 Lawrence Berkeley National Lab RPM talk
- 1/2011 AAS meeting, Seattle, WA
- 12/2010 Harvard High Energy Astrophysics Division seminar
- 12/2010 University of Pittsburgh colloquium
- 11/2010 Harvard Physics colloquium
- 11/2010 National Academies Keck Futures Initiative in Imaging Sciences, Irvine
- 11/2010 UC Irvine seminar
- 11/2010 Princeton seminar
- 10/2010 NYU physics colloquium
- 10/2010 Michigan State University colloquium
- 10/2010 WittFest, University of Toledo
- 10/2010 McGill University colloquium, Montreal
- 9/2010 Caltech physics colloquium
- 9/2010 UCLA astronomy seminar
- 9/2010 Pan-STARRS 1 Science Consortium meeting, Belfast, Northern Ireland
- 7/2010 Identification of Dark Matter, Montpellier, France
- 7/2010 TeV Particle Astrophysics, Paris
- 6/2010 Dark matter workshop, Aspen CTP
- 6/2010 Berkeley astronomy seminar
- 6/2010 Stanford/KIPAC seminar

- 5/2010 AAS, Miami
- 5/2010 Sackler conference, Harvard
- 2/2010 University of South Florida, Tampa physics colloquium
- 2/2010 APS, Washington, DC (invited talk)
- 1/2010 AAS, Washington, DC
- 12/2009 KITP Santa Barbara seminar
- 10/2009 Columbia University astronomy colloquium
- 10/2009 University of Michigan dark matter workshop
- 9/2009 UC Davis Physics colloquium
- 9/2009 SLAC dark forces workshop
- 9/2009 UC Berkeley Astro Theory lunch
- 9/2009 Fermilab dark matter workshop
- 9/2009 CITA astro seminar, Toronto
- 8/2009 Lecturer, New England Particle Physics Summer Retreat (NEPPSR)
- 7/2009 SLAC TeV Particle Astrophysics Conference
- 7/2009 Hawaii Institute for Astronomy seminar
- 6/2009 Directional detection of DM meeting, MIT
- 4/2009 Institute for Advanced Study, Princeton
- 4/2009 University of Maryland
- 2/2009 Stanford Physics seminar
- 1/2009 Aspen dark matter workshop
- 1/2009 AAS Meeting, Long Beach
- 12/2008 Texas Symposium on Relativistic Astrophysics, Vancouver
- 12/2008 Invited talk, National Academy of Sciences, Japanese-American Frontiers of Science
- 10/2008 JPL seminar
- 10/2008 University of Arizona Astronomy colloquium
- 9/2008 MIT Physics colloquium
- 9/2008 Princeton IAS particle physics seminar
- 8/2008 Identification of Dark Matter 2008, Stockholm, Sweden
- 7/2008 Planck foregrounds meeting, Pasadena
- 6/2008 CMBpol Foregrounds meeting, Fermilab
- 6/2008 APC (astroparticle physics and cosmology), University of Paris
- 5/2008 Dark Side II conference, University of Michigan, Ann Arbor
- 2/2008 UCLA dark matter meeting
- 1/2008 Marc Davis Fest, UC Berkeley
- 11/2007 Perimeter Institute, Waterloo, Ontario
- 10/2007 Stanford particle physics seminar
- 10/2007 University of Florida astronomy colloquium
- 9/2007 Max-Planck Institute for Astrophysics, Garching
- 8/2007 TeV Astrophysics meeting, Venice
- 8/2007 GLAST (Fermi) Symposium, Washington, D.C.
- 6/2007 LBNL particle physics seminar