

## Dr. Andrew Samuel Friedman

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### EDUCATION

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- May 2012 Ph.D. **Harvard University**, Astronomy & Astrophysics  
*Thesis: Infrared Light Curves of Type Ia Supernovae*
- June 2006 A.M. **Harvard University**, Astronomy  
*Thesis: Toward a More Standardized Candle Using GRB Energetics & Spectra*
- Dec 2001 B.A. **University of California, Berkeley**, Physics & Astrophysics, *Summa Cum Laude*,  
Phi Beta Kappa, Highest Honors in Physics, Highest Distinction in General Scholarship

### PROFESSIONAL APPOINTMENTS

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- 2017 – Assistant Research Scientist, **UC San Diego** Center for Astrophysics & Space Sciences
- 2017 – Research Affiliate, Program in STS, **Massachusetts Institute of Technology (MIT)**
- 2014-17 Research Associate, Program in Science, Technology, & Society (STS), **MIT**
- 2012-16 Visiting Research Scientist, **MIT Center for Theoretical Physics**
- 2012-14 National Science Foundation (NSF) STS Postdoctoral Fellow, **MIT**

### GRANTS, FELLOWSHIPS, HONORS, TELESCOPE TIME, AND AWARDS

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- 2015-19 NSF INSPIRE Award #1541160, **MIT** (\$900,360), Co-PI with D. Kaiser, A. Guth (MIT); Co-Is J. Gallicchio (Chicago), B. Keating (UCSD) (+A. Zeilinger Vienna)
- 2015-19 NASA Hubble Space Telescope, Cycle 23, #14216, Co-I; PI R. Kirshner, **Harvard** (\$320,686)
- 2016-17 **NASA /JPL** R&TD Innovative Spontaneous Concept Proposal (\$43,690), Co-I with PI H. Nguyen (JPL/Caltech), J. Gallicchio (Harvey Mudd), D. Kaiser (MIT)
- 2012-14 NSF SES Award #1056580 **MIT** (\$120,000), Co-PI with D. Kaiser (MIT)
- 2012-14 NASA Hubble Space Telescope, Cycle 20, #13046, Co-I; PI R. Kirshner, **Harvard** (\$350,542)
- 2005-13 Peters Automated InfraRed Imaging TELEscope, 13 Semesters, 300 hours each, Fred Lawrence Whipple Observatory, Co-I; PI R. Kirshner, **Harvard University**
- 2010-11 NASA Infrared Telescope Facility, Sem 2010A, Co-I; PI, G.H. Marion, **Harvard University**
- 2006-09 NASA Graduate Student Research Program Fellowship, **Harvard University / NASA Goddard Spaceflight Center**
- 2007-08 NASA *Swift* Satellite, Cycle 4, Co-I; PI R. Kirshner, **Harvard University**
- 2002-06 NSF Graduate Research Fellowship, **Harvard University Department of Astronomy**
- 2004,05 Certificate of Distinction in Teaching, **Harvard University** (Spring 2004, Fall 2005)
- 2003-07 James Mills Pierce Fellowship, Department of Astronomy, **Harvard University**

### 53 SCIENTIFIC PUBLICATIONS

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h-index: **18**, g-index: **40** ([NASA/ADS](#)), Citations: **1785**, Top 1<sup>st</sup> author: **186** ([Google Scholar](#))  
Refereed: **27** (Accepted: **26**, Submitted: **1**), In prep: **3** 1<sup>st</sup>/2<sup>nd</sup> author Refereed: **12**, In prep: **2**  
Non-Refereed: **27** (Conference: **1**, Popular: **11**, Circulars: **15**) 1<sup>st</sup> author non-refereed: **17**

### ALTERNATIVE METRICS

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- 5 articles since 2014 ([1](#), [2](#), [3](#), [4](#), [5](#)) in top 5% of all research outputs scored by [Altmetric.com](#), each in **97-99<sup>th</sup>** percentile for High Attention Score compared to outputs of same age and source.
- Articles [1](#), [5](#) among highest scoring outputs (top 0.2% all time) from *Physical Review Letters*.
- **415** online mentions on [Impactstory.org](#). [Top publication](#) saved and shared **198** times (Only **7%** of researchers get this much attention). Only **12%** of researchers this highly Cited in Wikipedia ([1](#), [2](#), [3](#), [4](#)).

### SELECTED PUBLICATIONS

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- 2019 Avelino, A., **Friedman, A.S.**, Mandel, K.S., Jones, D.O., Challis, P. and Kirshner, R.P. 2019, “Type Ia Supernovae are Excellent Standard Candles in the Near-Infrared”, *the Astrophysical Journal submitted*, ([arXiv:1902.03261](#))

- 2019 **Friedman, A.S.**, Leon, D., Crowley, K.D., Johnson, D., Tepy, G., Tytler, D., Keating, B.G., and Cole, G.M. 2019, “Constraints on Lorentz Invariance and CPT Violation using Optical Photometry and Polarimetry of Active Galaxies BL Lacertae and S5 B0716+714”, *Physical Review D*, Vol. 99, Issue 3, id. 035045 ([arXiv:1809.08356](#)) ([DOI](#))
- 2019 **Friedman, A.S.**, Guth, A.H., Hall, M.J.W., Kaiser, D.I., and Gallicchio, J. 2019, “Relaxed Bell Inequalities with Arbitrary Measurement Dependence for Each Observer”, *Physical Review A*, Vol. 99, Issue 1, id. 012121 ([arXiv:1809.01307](#)) ([DOI](#))
- 2018 Rauch, D., Handsteiner, J., Hochner, A., Gallicchio, J., **Friedman, A.S.**, + 2018, “Cosmic Bell Test Using Random Measurement Settings from High-Redshift Quasars”, *Physical Review Letters*, Vol. 121, Issue 8. id. 080403 ([arXiv:1808.05966](#)) ([DOI](#)) [Editor’s Suggestion]
- 2017 Handsteiner, J., **Friedman, A.S.**+ 2017, “Cosmic Bell Test: Measurement Settings from Milky Way Stars”, *Physical Review Letters*, Vol. 118, Issue 6. id. 060401 ([arXiv:1611.06985](#)) ([DOI](#)) [Featured in Physics, Editor’s Suggestion]
- 2015 **Friedman, A.S.** + 2015c, “[CfAIR2: Near-Infrared Light Curves of 94 Type Ia Supernovae](#)”, *The Astrophysical Journal Supplement Series*, Vol. 220, Iss. 1, id. 9, 35 pp ([arXiv:1408.0465](#)) ([DOI](#))
- 2014 Gallicchio, J.; **Friedman, A.S.**; Kaiser, D.I., “[Testing Bell’s Inequality with Cosmic Photons: Closing the Setting-Independence Loophole](#)”, *Physical Review Letters*, Vol. 112, Issue 11, id. 110405 (2014) ([arXiv:1310.3288](#)) ([DOI](#))
- 2013 **Friedman, A.S.**, Kaiser, D.I., & Gallicchio, J. 2013, “[The Shared Causal Pasts and Futures of Cosmological Events](#)”, *Phys. Rev. D*, Vol. 88, Issue 4, id. 044038, 18 pp. ([arXiv:1305.3943](#)) ([DOI](#))
- 2009 Mandel, K., Wood-Vasey, W.M., **Friedman, A.S.**, & Kirshner, R.P. 2009, “[Type Ia Supernova Light Curve Inference: Hierarchical Bayesian Analysis in the Near Infrared](#)”, *The Astrophysical Journal*, Vol. 704, Issue 1, pp. 629-651 ([arXiv:0908.0536](#)), ([DOI](#))
- 2008 Wood-Vasey, W.M., **Friedman, A.S.** + 2008, “[Type Ia Supernovae are Good Standard Candles in the Near Infrared: Evidence from PAIRITEL](#)”, *The Astrophysical Journal*, Vol. 689, Issue 1, pp. 377-390 ([arXiv:0711.2068](#)), ([DOI](#))
- 2005 **Friedman, A.S.** & Bloom, J.S. 2005a, “[Toward a More Standardized Candle Using GRB Energetics and Spectra](#)”, *ApJ*, Vol. 627, Issue 1, pp. 1-25 ([astro-ph/0408413](#)), ([DOI](#))

## INVITED TALKS & PRESENTATIONS

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- 2005 – **Talks:** Harvard (5), UC San Diego (13), American Astronomical Society (4), MIT (3), Vienna (2), SDSU (1), New Mexico Tech (1), Pittsburgh (1), Western Ontario (1), UCSB (1), LBNL (1)
- 2004 – **Posters:** AAS (3), MIT (1), Caltech (1), Berkeley (2), UCSB (1), NASA GSFC (1), Rome (1)

## TEACHING

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- 2018 Lecturer, “Cosmology”, **UC San Diego** (Spring 2018)
- 2012-15 Co-Leader, “Harvard/MIT Philosophy of Science Group”, **Harvard University**
- 2004-15 Teaching Fellow, “The Energetic Universe” (Spring 15), “Cosmic Connections” (Fall 05), “Matter In the Universe” (Spring 04, 05), **Harvard University**
- 2001-02 Teaching Assistant, **Summer Science Program**, (Summer 02), Happy Valley School, Ojai, CA; Teaching Assistant, “Introductory Astronomy” (Fall 01), **UC Berkeley**

## MENTORING

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- 2012 – **High School:** Isaac Broudy (Bonita Vista), **Undergrad:** Jeff Iuliano (Harvard), Isabella Sanders, Anthony Mark (MIT), Calvin Leung (Harvey Mudd), Jonah Saidian, Kevin Crowley, Walker Stevens (UCSD); **Grad:** David Leon, Roman Gerasimov (UCSD); **Postdoc:** Arturo Avelino (Harvard)

## OUTREACH

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- 2006 – **Popular Science Writing:** [Nautilus](#), [Astronomy Magazine](#), [Sky & Telescope](#), [NOVA: The Nature of Reality](#), [Rune: The MIT Journal of Arts and Letters](#), [Berkeley Scientific Journal](#)
- 2004 – **Selected Media Coverage:** *New York Times*, *The New Yorker*, *The Atlantic*, *Scientific American*, *Forbes*, *Quanta*, *New Scientist*, *NBC News*, *CBS News*, *Physics Today*, *APS Physics*, *Science*, *Nature*, *Nature Physics*, *NOVA*, *Astronomy Magazine*, *Ars Technica*, *Engadget*, *Gizmodo*, *Space.com*, *Astronomy Now*, *Inside Science*, *Science News*, *Science Alert*, *Live Science*, *Newsweek*, *FQXi*, *JSTOR Daily*, *MIT News*, *Backreaction*, *Spreadquantum*, *Briankoberlein* (+Wide International Coverage).