

## Dr. Andrew Samuel Friedman

**Address:** University of California, San Diego,  
Center for Astrophysics & Space Sciences,  
9500 Gilman Drive, CASS M/C 0424,  
SERF Bldg. 334, La Jolla, CA 92093-0424, USA

**Phone:** (858) 534-5416  
**Fax:** (858) 534-0177  
**e-mail:** [asf@ucsd.edu](mailto:asf@ucsd.edu)  
**Web:** <https://asfriedman.physics.ucsd.edu>

### EDUCATION

---

- 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

---

- 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, & AWARDS

---

- 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)
- 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)
- 2006-09 NASA Graduate Student Research Program Fellowship, **Harvard University / NASA Goddard Spaceflight Center**
- 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**

### TELESCOPE AWARDS

---

- 2015-18 NASA Hubble Space Telescope, Cycle 23, #14216, Co-I; PI R. Kirshner, **Harvard** (\$320,686)
- 2012-14 NASA Hubble Space Telescope, Cycle 20, #13046, Co-I; PI R. Kirshner, **Harvard** (\$350,542)
- 2010-11 NASA Infrared Telescope Facility, Sem 2010A, Co-I; PI, G.H. Marion, **Harvard University**
- 2005-13 Peters Automated InfraRed Imaging TELEscope, 13 Semesters, 300 hours each, Fred Lawrence Whipple Observatory, Co-I; PI R. Kirshner, **Harvard University**
- 2007-08 NASA *Swift* Satellite, Cycle 4, Co-I; PI R. Kirshner, **Harvard University**

### 52 SCIENTIFIC PUBLICATIONS

---

h-index: **18**, g-index: **39** ([NASA/ADS](#)), Citations: **1792**, Top 1<sup>st</sup> author: **189** ([Google Scholar](#))  
Refereed: **25** (Accepted: **24**, Submitted: **1**), In prep: **4** 1<sup>st</sup>/2<sup>nd</sup> author Refereed: **9**, In prep: **3**  
Non-Refereed: **27** (Conference: **1**, Popular: **11**, Circulars: **15**) 1<sup>st</sup> author non-refereed: **17**

### ALTERNATIVE METRICS

---

- 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 from *Physical Review Letters* (#40, #56 / 21,443).
- **418** online mentions on [Impactstory.org](#). [Top publication](#) saved and shared **198** times (Only 7% of researchers get this much attention). Research mentioned in 4 Wikipedia articles ([1](#), [2](#), [3](#), [4](#)) (Only 12% of researchers are this highly Cited in Wikipedia).

**SELECTED PUBLICATIONS**

- 2018 **Friedman, A.S.**, Guth, A.H., Hall, M.J.W., Kaiser, D.I., and Gallicchio, J. 2018, “Relaxed Bell Inequalities with Arbitrary Measurement Dependence for Each Observer”, *Physical Review A submitted*, ([arXiv:1809.01307](https://arxiv.org/abs/1809.01307))
- 2018 Rauch, D., Handsteiner, J., Hochrainer, 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](https://arxiv.org/abs/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](https://arxiv.org/abs/1611.06985)) (DOI) [Featured in Physics, Editor’s Suggestion]
- 2015 **Friedman, A.S.** + 2015c, “[CfAIR2: Near-Infrared Light Curves of 94 Type Ia Supernovae](https://arxiv.org/abs/1408.0465)”, *The Astrophysical Journal Supplement Series*, Vol. 220, Iss. 1, id. 9, 35 pp ([arXiv:1408.0465](https://arxiv.org/abs/1408.0465)) (DOI)
- 2014 Gallicchio, J.; **Friedman, A.S.**; Kaiser, D.I., “[Testing Bell’s Inequality with Cosmic Photons: Closing the Setting-Independence Loophole](https://arxiv.org/abs/1310.3288)”, *Physical Review Letters*, Vol. 112, Issue 11, id. 110405 (2014) ([arXiv:1310.3288](https://arxiv.org/abs/1310.3288)) (DOI)
- 2013 **Friedman, A.S.**, Kaiser, D.I., & Gallicchio, J. 2013, “[The Shared Causal Pasts and Futures of Cosmological Events](https://arxiv.org/abs/1305.3943)”, *Phys. Rev. D*, Vol. 88, Issue 4, id. 044038, 18 pp. ([arXiv:1305.3943](https://arxiv.org/abs/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](https://arxiv.org/abs/0908.0536)”, *The Astrophysical Journal*, Vol. 704, Issue 1, pp. 629-651 ([arXiv:0908.0536](https://arxiv.org/abs/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](https://arxiv.org/abs/0711.2068)”, *The Astrophysical Journal*, Vol. 689, Issue 1, pp. 377-390 ([arXiv:0711.2068](https://arxiv.org/abs/0711.2068)), (DOI)
- 2005 **Friedman, A.S.** & Bloom, J.S. 2005a, “[Toward a More Standardized Candle Using GRB Energetics and Spectra](https://arxiv.org/abs/astro-ph/0408413)”, *ApJ*, Vol. 627, Issue 1, pp. 1-25 ([astro-ph/0408413](https://arxiv.org/abs/astro-ph/0408413)), (DOI)

**INVITED TALKS & PRESENTATIONS**

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

**TEACHING**

- 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**

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

**OUTREACH**

- 2006 – **Popular Science Writing**: [Nautilus](https://arxiv.org/abs/1408.0465), [Astronomy Magazine](https://arxiv.org/abs/1408.0465), [Sky & Telescope](https://arxiv.org/abs/1408.0465), [NOVA: The Nature of Reality](https://arxiv.org/abs/1408.0465), [Rune: The MIT Journal of Arts and Letters](https://arxiv.org/abs/1408.0465), [Berkeley Scientific Journal](https://arxiv.org/abs/1408.0465)
- 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).