Robert A. Knop Jr., Ph. D.
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Education

1997 **Ph.D., Physics, California Institute of Technology**.
Thesis Title: "Spatially Resolved Infrared Spectroscopy of Seyfert Galaxies"
Advisor: B. T. Soifer

1992 **M.S., Physics, California Institute of Technology.**

1990 **B.S., Physics, Harvey Mudd College**.

Work Experience

2014–Present **Westminster College**. Associate Professor of Physics. Teaching physics, astronomy, and other classes; research in computational physics and astrophysics.

2010–2014 **Quest University Canada**. Professor of Physical Science. Taught undergraduate physics, astronomy, programming, and related subjects.

2010 **Belmont University**. Full-Time Adjunct Instructor of Physics.

2007–2009 **Linden Lab**. Production Operation Engineer (Aug. 2007–Sep. 2008), Server Release Manager (Oct. 2008–May 2009). Worked as a computer engineer in the operations team, and with the release team to develop and maintain the online virtual world Second Life, which runs on a cluster of 6,000 Linux Servers.

2001–2007 **Vanderbilt University**. Assistant Professor of Physics & Astronomy. Teaching undergraduate and graduate astronomy and astrophysics courses. Research on starburst, active, and interacting galaxies; on Type-Ia supernova progenitors; and on supernova cosmology (in collaboration with the Supernova Cosmology Project).

1996–2001 **Lawrence Berkeley National Laboratory**. Postdoctoral Fellow with the Supernova Cosmology Project, working with Saul Perlmutter. Led the software and data analysis effort for four years of successful supernova searches, and the photometric followup data that led to the discovery of the universe's acceleration (for which Perlmutter shared the 2011 Nobel Prize in Physics, and for which the entire team was awarded the 2015 Breakthrough Prize in Fundamental Physics). Performed photometric and spectroscopic observations at world-class telescopes. Supervised graduate and undergraduate students. Developed software and maintained computers for scientific use.

Courses Taught

Westminster College:	Foundations of Physics, Modern Physics, Electromagnetic Theory, Classical Mechanics, Computational Physics, General Relativity (independent study), Particle Physics (independent study) Capstone, Inquiry, The Renaissance and Scientific Discovery, Quantum Mechanics and Society, Life in the Universe, Stars, Galaxies and Cosmology
Quest University Canada:	Energy & Matter: Our Quantum World, Astronomy, Cornerstone, Physics 1, Physics 2, Life in the Universe, Computer Programming, Electricity and Magnetism, Statistics, Three-Dimensional Modeling and Animation, Classical Mechanics
Belmont University:	Introductory Physics for Audio Engineering, Introductory Physics for Pre-Pharmacy
Vanderbilt University:	Stars and Galaxies, Undergraduate Astronomy Seminar, Galactic Astrophysics, General Relativity, Nebular Astrophysics

Selected Publications (Full list at end)

- R. A. Knop, "A Computer Model of Classical Rolling Friction." *American Journal of Physics*, 2019, **87**, 720
- S. G. Djorgovski, S. G., P. Hut, R. A. Knop, G. Longo, S. McMillan, E. Vesperini, C. Donalek, Ciro; M. Graham, A. Mahabal, Asish; F. Sauer, C. White, Charles; and C. Lopes, "The MICA Experiment: Astrophysics in Virtual Worlds." Invited paper for the refereed proc. of the SLACTIONS 2012 conference, eds L. Morgado, Y. Sivan, A. M. Maia, *et. al.*, 2013
- D. Rubin, R. A. Knop, E. Rykoff, G. Aldering, R. Amanullah, K. Barbary, M. S. Burns, A. Conley, N. Connolly, S. Deustua, V. Fadeyev, H. K. Fakhouri, A. S. Fruchter, R. A. Gibbons, G. Goldhaber, A. Goobar, E. Y. Hsiao, X. Huang, M. Kowalski, C. Lidman, J. Meyers, J. Nordin, S. Perlmutter, C. Saunders, A. L. Spadafora, V. Stanishev, N. Suzuki, and L. Wang, "Precision Measurement of The Most Distant Spectroscopically Confirmed Supernova Ia with the Hubble Space Telescope." *The Astrophysical Journal*, 2013, **763**, 35
- X. Wang, L. Wang, A. V. Filippenko, E. Baron, M. Kromer, D. Jack, T. Zhang, G. Aldering, P. Antilogus, W. D. Arnett, D. Baade, B. J. Barris, S. Benetti, P. Bouchet, A. S. Burrows, R. Canal, E. Cappellaro, R. G. Carlberg, E. di Carlo, P. J. Challis, A. P. S. Crotts, J. I. Danziger, M. Della Valle, M. Fink, R. J. Foley, C. Fransson, A. Gal-Yam, P. M. Garnavich, C. L. Gerardy, G. Goldhaber, M. Hamuy, W. Hillebrandt, P. Höflich, S. T. Holland, D. E. Holz, J. P. Hughes, D. J. Jeffery, S. W. Jha, D. Kasen, A. M. Khokhlov, R. P. Kirshner, R. A. Knop, C. Kozma, K. Krisciunas, B. C. Lee, B. Leibundgut, E. J. Lentz, D. C. Leonard, W. H. G. Lewin, W. Li, M. Livio, P. Lundqvist, D. Maoz, T. Matheson, P. A. Mazzali, P. Meikle, G. Miknaitis, P. A. Milne, S. W. Mochnacki, K. Nomoto, P. E. Nugent, E. S. Oran, N. Panagia, S. Perlmutter, M. M. Phillips, P. Pinto, D. Poznanski, C. J. Pritchet, M. Reinecke, A. G. Riess, P. Ruiz-Lapuente, R. A. Scalzo, E. M. Schlegel, B. P. Schmidt, J. Siegrist,

A. M. Soderberg, J. Sollerman, G. Sonneborn, A. Spadafora, J. Spyromilio, R. A. Sramek, S. G. Starrfield, L. G. Strolger, N. B. Suntzeff, R. C. Thomas, J. L. Tonry, A. Tornambe, J. W. Truran, M. Turatto, M. Turner, S. D. Van Dyk, K. W. Weiler, J. C. Wheeler, M. Wood-Vasey, S. E. Woosley, and H Yamaoka, "Evidence for Type Ia Supernova Diversity from Ultraviolet Observations with the Hubble Space Telescope." *The Astrophysical Journal*, 2012, **749**, 126

- R. A. Knop, G. Aldering, R. Amanullah, P. Astier, G. Blanc, M. S. Burns, A. Conley, S. E. Deustua, M. Doi, R. Ellis, S. Fabbro, G. Folatelli, A. S. Fruchter, G. Garavini, S. Garmond, K. Garton, R. Gibbons, G. Goldhaber, A. Goobar, D. E. Groom, D. Hardin, I. Hook, D. A. Howell, A. G. Kim, B. C. Lee, C. Lidman, J. Mendez, S. Nobili, P. E. Nugent, R. Pain, N. Panagia, C. R. Pennypacker, S. Perlmutter, R. Quimby, J. Raux, N. Regnault, P. Ruiz-Lapuente, G. Sainton, B. Schaefer, K. Schahmaneche, E. Smith, A. L. Spadafora, V. Stanishev, M. Sullivan, N. A. Walton, L. Wang, W. M. Wood-Vasey, and N. Yasuda, "New Constraints on Ω_M and Ω_Λ, and w from an Independent Set of 11 High-Redshift Supernovae Observed with the Hubble Space Telescope." *The Astrophysical Journal*, 2003, **598**, 102–137.

- S. Perlmutter, G. Aldering, G. Goldhaber, R. A. Knop, P. E. Nugent, P. G. Castro, S. Deustua, S. Fabbro, A. Goobar, D. E. Groom, I. M. Hook, A. G. Kim, M. Y. Kim, J. C. Lee, N. J. Nunes, R. Pain, C. R. Pennypacker, R. Quimby, C. Lidman, R. S. Ellis, M. Irwin, R. G. McMahon, P. Ruiz-Lapuente, N. Walton, B. Schaefer, B. J. Boyle, A. V. Filippenko, T. Matheson, A. Fruchter, N. Panagia, H. J. M. Newberg, W. J. Couch, "Measurements of Ω_M and Ω_Λ from 42 High-Redshift Supernovae," *The Astrophysical Journal*, 1999, **517**, 565–586. (This paper was the primary paper cited in the Nobel Prize awarded to S. Perlmutter in 2011.)

Selected Presentations (More complete list later)

- "Reinventing the wheel: a classical model of rolling friction." Westminster College Faires Faculty Forum, 2020.
- "Colliding Galaxies on the Computer." Westminster College Faires Faculty Forum, February, 2016.
- "The Discovery of the Accelerating Universe." Reed College, March, 2012.
- "Dark Energy and the Accelerating Universe." Belmont University, October, 2009.
- "Dark Energy: The Big Question in Modern Cosmology." Colgate University physics colloquium, November, 2008.
- "The Discovery of the Accelerating Universe." Keynote talk at the North Carolina section meeting of the American Association of Physics Teachers, October, 2007.

Honors and Awards

2015	Co-recipient, the Breakthrough Prize in Fundamental Physics
2007	Co-recipient, the Gruber Prize in Cosmology
2004	Chancellor's Award for Research, Vanderbilt University
1991-1994	Kodak Fellow, Caltech.
1990	Graduated with Honors in Physics and in Humanities/Social Sciences, Harvey Mudd College.
1990	Radley Prize in Humanities and Social Sciences, Harvey Mudd College.
1987	Platt Prize for outstanding Freshman, Harvey Mudd College.

Professional Activities and Society Memberships

2008–2012	The Meta-Institute of Computational Astronomy (www.mica-vw.org)
2007	Member, AAS Small Research Grants Panel (January)
2006–2007	AAS Shapley Lecturer
2005–2007	Member, Extragalactic Time Allocation Committee, NOAO
2019	Referee for *The American Journal of Physics*
2004–2005	Referee for *The Astrophysical Journal*
1999	Referee for *The Astronomical Journal*
1990–Present	Member, The American Physical Society
1992–Present	Member, The American Astronomical Society
2002–Present	Member, The Astronomical Society of the Pacific

Additional Skills and Experience

- **Computer Programming**: Proficient in Python, C, C++, Perl, Java, PHP, Javascript, SQL. Have taught college programming and computational physics classes. Adroit at picking up computer languages, libraries, and frameworks quickly.
- **Computer Administration**: Experience administering very large clusters of Linux machines. Proficient with Unix (primarily Linux). Experience creating and maintaining static and dynamic pages on for the World Wide Web. Experience with PostgreSQL, MySQL, Apache, and other standard systems.
- **Music**: Violinist since the age of five, violist since 1995. Currently playing viola with the Westminster College Symphony Orchestra.
- **Theatre**: Accomplished amateur actor. Numerous roles acting in, directing, stage managing, and producing community and university theater productions.

Undergraduate Student Research Advised

- Jake Staub, Westminster College, 2019–2020; computational molecular modelling
- Madison Huff (chemistry major), Westminster College, 2019–2020; computational astrochemistry
- Jessica Nelson, Westminster College, 2017–2019 (freshman and sophomore years); numerical interacting galaxy simulations

- Andrius Burnelis, Westminster College, 2017–2019 (freshman and sophomore years); numerical astrophysical hydrodynamics
- Ava Hoag, Westminster College, 2017–2018; Capstone project: "A Glimpse at Space Around Black Holes"
- Isaiah Morgenstern, Westminster College, 2015–2017; Capstone project: "Numerically Solving the Schrödinger Equation using GPU Computing"
- Tyler Lucas, Westminster College, 2015–2016; Capstone project: "Formation Time of Orbital Resonances"
- Dylan Thomas, Westminster College, 2015–2016; Capstone project: Computational fluid dynamics of slowly-rotating baseballs
- Veronica Corcheran, Westminster College, 2014–2015; Capstone project: Numerical simulation of planetary disruption by a passing star
- Georges Gedeon-Achi, Quest University, 2014; Question: "How Necessary is an Open Web in Modern Society?"
- Eric Ross, Quest University, 2013; Question: "What is order in the physical sciences?"
- Tucker Sherman, Quest University, 2013; Question: "How can intellectual property rights facilitate progress in the 21st century?"
- Easton Smith, Quest University, 2013; Question: "What are the barriers to energy sustainability?"
- Parker Thompson, Quest University, 2013; Question: "What is digital security?"
- Anna Wheeler, Quest University, 2013; Question: "What can we learn about Earth by studying other planets?"
- Chloe Wightman, Quest University, 2013; Question: "What is the Universe?"
- Claire Hately, Quest University, 2012; Question: "How can we keep creativity alive?"
- Cameron Pittman, Undergraduate Honors Thesis, Vanderbilt University, 2009
- Anders Jensen, Undergraduate Honors Thesis, Vanderbilt University, 2008 (High Honors)
- Katie Chynoweth, Graduate Student, Vanderbilt University, 2005-2007
- Andrew Collazzi, Undergraduate Honors Thesis, Vanderbilt University, 2006
- Eric Smith, MS, Physics, Vanderbilt University, 2005
- Naved Mahmud, Undergraduate Honors Thesis, Vanderbilt University, 2005 (High Honors)
- Jonathan Stricker, Undergraduate Honors Thesis, Vanderbilt University, 2005 (High Honors)
- James Schlaerth, Undergraduate Honors Thesis, Vanderbilt University, 2004 (High Honors)
- René Ortmann, MS, Physics, Vanderbilt University, 2003
- Jessica Hodges, Undergraduate Research, Vanderbilt University, 2002
- K. Sterling Garmond, Summer Undergraduate Research, LBNL, 2000

Invited Talks, Seminars, and Colloquia

- "Reinventing the wheel: a classical model of rolling friction." Westminster College Faires Faculty Forum, 2020.
- "Colliding Galaxies on the Computer." Westminster College Faires Faculty Forum, February, 2016.
- "The Discovery of the Accelerating Universe." Reed College, March, 2012.
- "Dark Energy and the Accelerating Universe." Belmont University, October, 2009.

- "Dark Energy: The Big Question in Modern Cosmology." Colgate University physics colloquium, November, 2008.
- "The Discovery of the Accelerating Universe." Keynote talk at the North Carolina section meeting of the American Association of Physics Teachers, October, 2007.
- "High-Velocity & Relativistic Gas Near Supermassive Black Holes at the Cores of Galaxies":
  - East Carolina University, April, 2007.
  - The University of Missouri at Rolla, April, 2007.
  - Texas Tech, Lubbock, TX, March, 2007.
  - Western Kentucky University, February, 2007.
- "Galaxies in Collision", High Point University, March, 2006.
- "Measuring Cosmology with Type Ia Supernovae", Division of Particles and Fields, American Physical Society, UCLA, January, 1999.
- "Measuring the Expansion of the Universe with Supernovae", Harvey Mudd College, November, 1998.

Invited AAS Shapley Lectures

- "The Power of the Dark Side: The Exotic Material That Makes Up Most Of Our Universe" :
  - East Carolina University, April, 2007
  - Univ. of Missouri at Rolla, April, 2007
- "A Modern View of the Expanding Universe"
  - Texas Tech, March, 2007
  - Guilford Technical Community College, March, 2006.
- "Galaxies in Collision", Westfield State College, May, 2006.

Recent and Selected Outreach Activities

- Public outreach science talks for the Science Circle in Second Life, 2014–2019; recent talks listed below. Talks are archived online at `https://www.sciencecircle.org/Rob%20Knop/`
  - "Staring Into the Abyss: The First Image of a Supermassive Black Hole", May, 2019
  - "What is Entropy?", January, 2019
  - "Sterile Neutrinos", September, 2018
  - "Stephen Hawking's Last Paper: Eternal Inflation and the Multiverse", May, 2018
  - "The First Stars", April, 2018
  - "Copernicus' Epicycles", March, 2018
  - "Black Hole Demographics", January, 2018
  - "Colliding Neutron Stars", November, 2017

- "The 2017 Nobel Prize in Physics: Detecting Gravitational Waves", October, 2017
- "Eclipses: In memory of Paul Doherty (Patio Plasma)", September, 2017
- "Discrepancies in the Measured Expansion Rate of the Universe", February, 2017
- "Neutrino Oscillations", January, 2016

- Talks at the Whistler, BC and Squamish, BC public libraries, 2010-2014
  - "The Hunt for Planets in our Galaxy", April, 2014
  - "The Higgs Boson: Background, and the News from CERN", October, 2012
  - "The Discovery of the Accelerating universe", November, 2011
  - "Galaxies in Collision", May, 2011
  - "The Birth and Fate of the Universe", October, 2010

- "Dr. Knop Talks Astronomy," a regular public outreach astronomy lecture series given in Second Life in association with MICA, the Meta-Institute of Computational Astronomy, 2008–2012. A list of talks given is here: `http://www.mica-vw.org/wiki/index.php/Popular_Talks`

- Podcasts for *365 Days of Astronomy.* 2009–2011.

- Talks at VCON (science fiction convention in Vancouver, BC)
  - September, 2012: "The Discovery of the Accelerating Universe"
  - September, 2011: "The Science Behind Larry Niven's *Neutron Star*"
  - October, 2010: "Newtonian Physics in Science Fiction Movies and TV: the Good, the Bad, and the Ugly"

- Talks at Hypericon (science fiction convention in Nashville, TN)
  - "The Science of *Interstellar*", June, 2015
  - "Parallel Universes", June, 2010.
  - 'How We Know That Dark Matter Exists" and "Constructing a Space Combat Game That Obeys Newton's Laws", June, 2009.
  - "Quantum Teleportation: Entangled States and 'Spooky Action at a Distance' ", June, 2008.
  - "Newtonian Physics in Science Fiction Movies and TV: the Good, the Bad, and the Ugly", June, 2007.
  - "Black Holes: Misconceptions, and the Even More Startling Truth" and "A Modern View of the Expanding Universe", June, 2006.

- Leader, workshop on "active learning" techniques for introductory astronomy, High Point University, March, 2006.

- Featured talk at the Dyer Observatory 50th Anniversary Celebration, December 12, 2003: "From Seyfert Galaxies to the Expansion of the Universe."

PUBLICATIONS

Refereed Journal Articles

1. R. A. Knop, "A Computer Model of Classical Rolling Friction." *American Journal of Physics*, 2019, **87**, 720

2. S. G. Djorgovski, S. G., P. Hut, R. A. Knop, G. Longo, S. McMillan, E. Vesperini, C. Donalek, Ciro; M. Graham, A. Mahabal, Asish; F. Sauer, C. White, Charles; and C. Lopes, "The MICA Experiment: Astrophysics in Virtual Worlds." Invited paper for the refereed proc. of the SLACTIONS 2012 conference, eds L. Morgado, Y. Sivan, A. M. Maia, *et. al.*, 2013

3. D. Rubin, R. A. Knop, E. Rykoff, G. Aldering, R. Amanullah, K. Barbary, M. S. Burns, A. Conley, N. Connolly, S. Deustua, V. Fadeyev, H. K. Fakhouri, A. S. Fruchter, R. A. Gibbons, G. Goldhaber, A. Goobar, E. Y. Hsiao, X. Huang, M. Kowalski, C. Lidman, J. Meyers, J. Nordin, S. Perlmutter, C. Saunders, A. L. Spadafora, V. Stanishev, N. Suzuki, and L. Wang, "Precision Measurement of The Most Distant Spectroscopically Confirmed Supernova Ia with the Hubble Space Telescope." *The Astrophysical Journal*, 2013, **763**, 35

4. X. Wang, L. Wang, A. V. Filippenko, E. Baron, M. Kromer, D. Jack, T. Zhang, G. Aldering, P. Antilogus, W. D. Arnett, D. Baade, B. J. Barris, S. Benetti, P. Bouchet, A. S. Burrows, R. Canal, E. Cappellaro, R. G. Carlberg, E. di Carlo, P. J. Challis, A. P. S. Crotts, J. I. Danziger, M. Della Valle, M. Fink, R. J. Foley, C. Fransson, A. Gal-Yam, P. M. Garnavich, C. L. Gerardy, G. Goldhaber, M. Hamuy, W. Hillebrandt, P. Höflich, S. T. Holland, D. E. Holz, J. P. Hughes, D. J. Jeffery, S. W. Jha, D. Kasen, A. M. Khokhlov, R. P. Kirshner, R. A. Knop, C. Kozma, K. Krisciunas, B. C. Lee, B. Leibundgut, E. J. Lentz, D. C. Leonard, W. H. G. Lewin, W. Li, M. Livio, P. Lundqvist, D. Maoz, T. Matheson, P. A. Mazzali, P. Meikle, G. Miknaitis, P. A. Milne, S. W. Mochnacki, K. Nomoto, P. E. Nugent, E. S. Oran, N. Panagia, S. Perlmutter, M. M. Phillips, P. Pinto, D. Poznanski, C. J. Pritchet, M. Reinecke, A. G. Riess, P. Ruiz-Lapuente, R. A. Scalzo, E. M. Schlegel, B. P. Schmidt, J. Siegrist, A. M. Soderberg, J. Sollerman, G. Sonneborn, A. Spadafora, J. Spyromilio, R. A. Sramek, S. G. Starrfield, L. G. Strolger, N. B. Suntzeff, R. C. Thomas, J. L. Tonry, A. Tornambe, J. W. Truran, M. Turatto, M. Turner, S. D. Van Dyk, K. W. Weiler, J. C. Wheeler, M. Wood-Vasey, S. E. Woosley, and H Yamaoka, "Evidence for Type Ia Supernova Diversity from Ultraviolet Observations with the Hubble Space Telescope." *The Astrophysical Journal*, 2012, **749**, 126

5. R. Amanullah, C. Lidman, D. Rubin, G. Aldering, P. Astier, K. Barbary, M. S. Burns, A. Conley, K. S. Dawson, S. E. Deustua, M. Doi, S. Fabbro, L. Faccioli, H. K. Fakhouri, G. Folatelli, A. S. Fruchter, H. Furusawa, G. Garavini, G. Goldhaber, A. Goobar, D. E. Groom, I. Hook, D. A. Howell, N. Kashikawa, A. G. Kim, R. A. Knop, M. Kowalski, E. Linder, J. Meyers, T. Morokuma, S. Nobili, J. Nordin, P. E. Nugent, L. Östman, R. Pain, N. Panagia, S. Perlmutter, J. Raux, P. Ruiz-Lapuente, A. L. Spadafora, M. Strovink, N. Suzuki, L. Wang, M. W. Wood-Vasey (The Supernova Cosmology Project), "Spectra and Hubble Space Telescope Light Curves of Six Type Ia Supernovae at $0.511 < z < 1.12$ and the Union2 Compilation." *The Astrophysical Journal*, 2010, **716**, 712–738

6. T. Morokuma, K. Tokita, C. Lidman, M. Doi, N. Yasuda, G. Aldering, Greg; R. Amanullah, K. Barbary, K. Dawson, V. Fadeyev, H. K. Fakhouri, G. Goldhaber, A. Goobar, T. Hattori, J. Hayano, I. M. Hook, D. A. Howell, H. Furusawa, Y. Ihara, N. Kashikawa, R. A. Knop, K. Konishi, J. Meyers, T. Oda, R. Pain, S. Perlmutter, D. Rubin, A. L. Spadafora, N. Suzuki, N. Takanashi, T. Totani, H. Tomonori, H. Utsunomiya, L. Wang, "Subaru FOCAS Spectroscopic Observations of High-Redshift Supernovae." *Publications of the Astronomical Society of Japan*, 2010, **62**, 19

7. S. Nobili, V. Fadeyev, G. Aldering, R. Amanullah, K. Barbary, M. S. Burns, K. S. Dawson, S. E. Deustua, L. Faccioli, A. S. Fruchter, G. Goldhaber, A. Goobar, I. Hook, D. A. Howell,

A. G. Kim, R. A. Knop, C. Lidman, J. Meyers, P. E. Nugent, R. Pain, N. Panagia, S. Perlmutter, D. Rubin, A. L. Spadafora, M. Strovink, N. Suzuki, and H. Swift (The Supernova Cosmology Project), "Constraining dust and color variations of high-z SNe using NICMOS on HST." *The Astrophysical Journal*, 2009, **700**, 1415–1427

8. S. G. Djorgovski, P. Hut, S. McMillan, E. Vesperini, R. A. Knop, W. Farr, and M. J. Graham, "Exploring the Use of Virtual Worlds as a Scientific Research Platform: The Meta-Institute for Computational Astrophysics (MICA)." FaVE 2009; Lehmann-Grube, F,. *et. al.*, eds., ICST Lecture Notes Ser., Berlin: Springer Verlag. astro-ph 0907.3520

9. M. Kowalski, D. Rubin, G. Aldering, R. J. Agostinho, A. Amadon, R. Amanullah, C. Balland, K. Barbary, G. Blanc, P. J. Challis, A. Conley, N. V. Connolly, R. Covarrubias, K. S. Dawson, S. E. Deustua, R. Ellis, S. Fabbro, V. Fadeyev, X. Fan, B. Farris, G. Folatelli, B. L. Frye, G. Garavini, E. L. Gates, L. Germany, G. Goldhaber, B. Goldman, A. Goobar, D. E. Groom, J. Haissinski, D. Hardin, I. Hook, S. Kent, A. G. Kim, R. A. Knop, C. Lidman, E. V. Linder, J. Mendez, J. Meyers, G. J. Miller, M. Moniez, A. M. Mourão, H. Newberg, S. Nobili, P. E. Nugent, R. Pain, O. Perdereau, S. Perlmutter, M. M. Phillips, V. Prasad, R. Quimby, N. Regnault, J. Rich, E. P. Rubenstein, P. Ruiz-Lapuente, F. D. Santos, B. E. Schaefer, R. A. Schommer, R. C. Smith, A. M. Soderberg, A. L. Spadafora, L. G. Strolger, M. Strovink, N. B. Suntzeff, N. Suzuki, R. C. Thomas, N. A. Walton, L. Wang, M. M .Wood-Vasey, and J. L. Yun, "Improved Cosmological Constraints from New, Old, and Combined Supernova Data Sets." *The Astrophysical Journal*, 2008, **686**, 749–778

10. T. Morokuma, M. Doi, N. Yasuda, M. Akiyama, K. Sekiguchi, H. Furusawa, Y. Ueda, T. Totani, T. Oda, T. Nagao, N. Kashikawa, T. Murayama, M. Ouchi, M. G. Watson, M. W. Richmond, C. Lidman, S. Perlmutter, A. L. Spadafora, G. Aldering, L. Wang, I. M. Hook, and R. A. Knop, "The Subaru/XMM-Newton Deep Survey (SXDS). V. Optically Faint Variable Object Survey." *The Astrophysical Journal*, 2008, **676**, 163–183.

11. N. Kuznetsova, K. Barbary, B. Connolly, A. G. Kim, R. Pain, N. A. Roe, G. Aldering, R. Amanullah, K. Dawson, M. Doi, V. Fadeyev, A. S. Fruchter, R. Gibbons, G. Goldhaber, A. Goobar, A. Gude, R. A. Knop, M. Kowalski, C. Lidman, T. Morokuma, J. Meyers, S. Perlmutter, D. Rubin, D. J. Schlegel, A. L. Spadafora, V. Stanishev, M. Strovink, N. Suzuki, L. Wang, L., and N. Yasuda, "A New Determination of the High-Redshift Type Ia Supernova Rates with the Hubble Space Telescope Advanced Camera for Surveys." *The Astrophysical Journal*, 2008, **673**, 981–998.

12. A. Conley, G. Goldhaber, L. Wang, G. Aldering, R. Amanullah, E. D. Commins, V. Fadeyev, G. Folatelli, G. Garavini, R. Gibbons, A. Goobar, D. E. Groom, I. Hook, D. A. Howell, A. G. Kim, R. A. Knop, M. Kowalski, N. Kuznetsova, C. Lidman, S. Nobili, P. E. Nugent, R. Pain, S. Perlmutter, E. Smith, A. L. Spadafora, V. Stanishev, M. Strovink, R. C. Thomas, W. M. Wood-Vasey, "Measurement of $\Omega_{\rm M}$, Ω_Λ from a Blind Analysis of Type Ia Supernovae with CMAGIC: Using Color Information to Verify the Acceleration of the Universe." *The Astrophysical Journal*, 2006, **644**, 1–20.

13. M. Sullivan, D. A. Howell, K. Perrett, P. E. Nugent, P. Astier, E. Aubourg, D. Balam, S. Basa, R. G. Carlberg, A. Conley, S. Fabbro, D. Fouchez, J. Guy, I. Hook, H. Lafoux, J. D. Neill, R. Pain, N. Palanque-Delabrouille, C. J. Pritchet, N. Regnault, J. Rich, R. Taillet, G. Aldering, S. Baumont, J. Bronder, M. Filiol, R. A. Knop, S. Perlmutter, C. Tao, "Photometric

Selection of High-Redshift Type Ia Supernova Candidates." *The Astronomical Journal*, 2006, **131**, 960–972.

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