

Dr. Bryan E. Penprase

Dean of Faculty, Undergraduate Program, Soka University of America
Research Professor of Astronomy, Pomona College
Visiting Associate, California Institute of Technology
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Administrative Positions

2017-present – Dean of Faculty, Undergraduate Program, Soka University of America

Directing the Undergraduate Academic Program at Soka University. With the Soka faculty, working to hire and develop faculty, advancing the innovative Soka University of America curriculum, managing Learning Clusters, and other duties to support the growth and excellence of the undergraduate program.

2015-2017 - Director, Centre for Teaching and Learning, Yale-NUS College, Singapore

Founded and Directed the Centre, which includes four teaching postdocs, a senior research associate, an associate director, and an administrator, with a budget of over \$130,000. Role includes advising leadership on all aspects of teaching and learning, organizing international conferences on liberal arts, and developing and policies for assessing and rewarding excellence in teaching, and playing a lead role in faculty development and educational research at Yale-NUS.

2013-2014 - co-Director, Liberal Arts Consortium for Online Learning (LACOL)

As founding co-Director, reported to the Presidents of Amherst, Claremont McKenna, Carleton, Swarthmore, Haverford, Pomona, Vassar and Williams Colleges, and developed priorities and organized a conference on online learning at Pomona College. The LACOL Consortium included nearly 1000 faculty from all eight colleges, and budgets pooled from the President's office in each institution.

2012-2013 - American Council on Education (ACE) Fellow, Yale University

Reported to Yale's President Peter Salovey, and developed reports and white papers on topics ranging from online learning, teaching and learning centers, diversity and social mobility in higher education, math teaching, liberal arts in India, and co-authored the blueprint of the Yale-NUS College curriculum.

2007-2011 - Chair, Physics and Astronomy, Pomona College

Led a department of 8 faculty, and four full time staff, with multiple shops and off campus facilities, and worked with a budget of over \$100,000 for capital improvements and operations. Led initial planning of the new Physics, Math and Astronomy building, as well as major refurbishments of the Observatory and Planetarium.

1993-2016 - Director, Frank P. Brackett Observatory

Developed collaborations and joint research programs with NASA's JPL, Caltech and the Carnegie Observatories, and provided substantial research capabilities to Pomona College in Astronomy through external funding from the Fletcher Jones Foundation, NASA, JPL, and NSF, resulting in major upgrades of the 1-meter telescope for remote operations and development of the astronomical computing initiative, as well as international research collaborations centered at Caltech.

Academic Positions

2017-present – **Dean of Faculty, Undergraduate Program, Soka University of America**

2016-present - **Visiting Associate, California Institute of Technology**

2014-2017 - **Professor of Science, Yale-NUS College/NUS Singapore**

2016-present – **Research Professor of Astronomy, Pomona College**

2008-2016 - **Frank P Brackett Professor of Astronomy, Pomona College**

2000-2007 – **Associate Professor of Physics and Astronomy, Pomona College**

1993-1999 – **Assistant Professor of Physics and Astronomy, Pomona College**

1992-1993 – **National Research Council, Postdoctoral Fellow, California Institute of Technology**

Education

Ph. D. - University of Chicago, Astronomy and Astrophysics, 1992

M.S. - Stanford University, Applied Physics, 1985

B.S. - Stanford University, Physics, 1985

Recent Committees and Service

- NUS Teaching Academy, Horizon Scanning Committee, Chair, 2017.
- NUS University Teaching Excellence Committee, Member, 2016-2017.
- Teaching Academy, National University of Singapore, Member, 2016-2017.
- Teaching, Learning and Advising Committee, Chair, Yale-NUS College, 2015-2016
- Dean of Admissions Search Committee, Member, Yale-NUS College, 2015-16
- Presidential Task Force on Technology-Enhanced Teaching, Member, Yale-NUS College, 2015-16
- Science Division Director Search Committee, Member, Yale-NUS College, 2014-15
- Yale-NUS Campus Inauguration Steering Committee, Member, 2014-15
- Future Learning Technologies Committee, Chair, Pomona College, 2013-14
- Science Division, Interim Chair, Pomona College, 2013-14
- Executive Committee, Member, Pomona College, 2013-14
- British Fellowship Committee, Member, Pomona College, 2013-14
- Freshman Scholars at Yale Committee, Member, Yale University, 2012-13
- Yale-NUS Curriculum Committee, Member, Yale University, 2012-13

- Teaching and Learning Committee, Chair, Pomona College, 2006-7
- Faculty Personnel Planning Committee, Member, Pomona College, 2004

National and International Service and Boards

- O,P. Jindal Global University School of Liberal Arts, New Delhi, Board Member, 2015-present
- Future of Liberal Arts and Sciences in India, steering committee member, 2014-present
- Liberal Studies in Engineering – National Academies Meeting, Session Chair and Resource Person, 2015
- ACE Institute for Leading Internationalization, member, 2015.
- Hubble Space Telescope Time Allocation Committee, member, 2011-2013
- NASA Keck Telescope Time Allocation Committee, member, 2010-2013
- Project Kaleidoscope Leadership Institute, mentor, 2007-2010
- Southern California PKAL Regional Network, chair and member, 2008-2011
- Higher Education Working Group, California Space Grant Consortium, Chair, 2008-2011
- Project Kaleidoscope STEM Education Network, F21 member, 1995-present

International Education Conferences and Initiatives

- STEM Innovation Conference – Yale-NUS College, June 2017, Chair, Organizing Committee
- Globalizing the Liberal Arts Conference, Yale University, June 2016, co-organizer
- GROWTH Astronomy Education Initiative, Caltech, Sept. 2015 onwards, lead scientist
- Future of Liberal Arts in India III, Symbiosis University, Pune, May 2016, co-organizer
- Yale-NUS College Inaugural Symposium, October 2015, co-organizer
- Future of Liberal Arts and Sciences in India II, Ashoka University/O.P. Jindal University, New Delhi, India, March 2015, co-organizer
- Liberal Arts Consortium for Online Learning, Pomona College, June 2014, co-Director
- Future of Liberal Arts and Sciences in India, Raman Research Institute, Bangalore, India, Jan. 2014, co-organizer.

Major Research Grants and Awards

- Teagle Foundation, 2015 - "*Globalizing the Liberal Arts*" - B. Penprase and C. Bailyn, Co-PIs, **\$50,000**.
- NSF PIRE 2015 - "*GROWTH - The Global Relay of Observatories for Watching Transients Happen*," M. Kasliwal, PI, (Caltech), with co-I's T. Prince (Caltech), L. Yan (Caltech); with B. Penprase, R. Quimby (SDSU), P. Wozniak (LANL); S. Vogel (U. Maryland), and D. Kaplan (U. Wilwaukee). **\$4,500,000**
- NSF PIRE 2014 - "*The Zwicky Transient Facility*," S. Kulkarni, PI, (Caltech) with Co-PI's T. Prince, B. Penprase, R. Dekany, and G. Helou, **\$8,980,000**

- Fletcher Jones Foundation 2013 - "Digital Immersive Theatre," M. Ebert, B. Penprase, P. Choi, and D. Tanenbaum, **\$1,000,000**.
- NSF MRI 2010 - "*CCAO-Cam: A Remote-Access, Dual-Band (Optical/NIR) Adaptive Optics System for the Table Mountain 1-meter telescope*," P. Choi, PI; with R. Erik Spjut (HMC), S. Severson (SSU), and B. Penprase, **\$637,000**
- Fletcher Jones Foundation 2001 - "*Astronomical Computing Initiative at Pomona College*", B. Penprase (PI), **\$567,000**.

Honors and Awards

- National University of Singapore, Teaching Academy, 2016-present
- Postgraduate Certificate, International Faculty Scholarship of Teaching and Learning Leadership Program, University of British Columbia, 2016
- Fellow, American Council on Education (ACE), 2012-2013
- Visiting Professor, Raman Research Institute, Bangalore, India, 2008.
- Downing Fellow, Downing College, Cambridge University, UK, 2005.
- Visiting Scientist, Harvard SAO, 2004.
- ASEE JPL faculty fellow, 1997 and 1998

Teaching and Curriculum Development

- Singapore Faculty Development Network, member, 2015-present
- Lead Instructor - Yale-NUS Foundations of Science (8 faculty teaching team), 2015-present
- Developed Experiential Course - "Cosmology and Culture of the Chola" - India, 2014
- Developed Experiential Course - "Ancient and Modern Chinese Universe" - China, 2015
- Inaugural Curriculum Committee, Yale-NUS College, member, 2012-13
- Astronomical Computing Initiative, Pomona College - Developed simulations and visualizations with Fletcher Jones Foundations Grant
- Developed courses throughout the curriculum in Astronomy, Astrophysics and Physics at Pomona College, including Archaeoastronomy and World Cosmology, Earth's Cosmic History, Advanced Observational Astronomy, Interstellar Medium and Star Formation, Extragalactic Astronomy and Cosmology

Publications

Books and Book Chapters:

Penprase, B.E., "*The New Age of STEM Teaching and Learning: How Active Learning, Online Technologies and Research Have Transformed STEM Education*," monograph under contract with Stylus Publishing; to appear in 2017.

Penprase, B.E., “*Undergraduate Education at NUS and the founding of Yale-NUS College*,” two chapters in the forthcoming sequel to “The New Flagship University,” edited by John Douglass, UC Berkeley CSHE.

Penprase, B.E., “The Zwicky Transient Facility,” article in AccessScience McGraw-Hill Education Encyclopedia of Science & Technology.

Penprase, B.E., "New liberal arts and science institutions in India and Singapore – the role of STEM education," contributed article to be published in *The Liberal Arts and Science Education Dialogue across Continents: Experiences and Perspectives from the USA, Europe, and Asia*, Palgrave Macmillan.

Penprase, B.E., "Calendars and Timekeeping Around the World" an entry in the *Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures*, H. Selin, editor, Springer Verlag, NY.

Penprase, B.E., “*The Power of Stars – How Celestial Observations Have Shaped Civilization*,” published by Springer Verlag. First edition released October 2010; second edition in proofs and will appear April 2017.

Garsten, B., Patke, R., Bailyn, C., Jacobs, J., Chuan, K., and Penprase, B., "*Yale-NUS College - A New Community of Learning*" - published April 2013.

Publications in Refereed Journals

(undergraduate student authors indicated with an asterisk):

Swiggum, J.K., McLaughlin, M., Lorimer, D., Kaplan, D.L., Lynch, R., Gentile, P., Rosen, R., Heatherly, S.A., Ray, P.S., Bogdanov, S., Barlow, B.N., Hegedus, R.J., Vasquez Soto, A., Clancy, P., Kondratiev, V.I., Stovall, K., Istrate, A., and **Penprase, B.**, 2017, “A Multi-Frequency Study of PSR J1400-1431, *Astrophysical Journal*, submitted.

Penprase, B.E., Sargent, W., Martinez, I.T.*, and Beeler, D.*, 2017, “A Possible Redshift Dependence of the D/H Ratio Observed in QSO/DLA Absorption Line Systems,” *Monthly Notices of the Royal Astronomical Society*, in preparation.

Marsh, F.M.*, Simon, A.A., **Penprase, B.E.**, Mettig, H., and Hahn, G. 2016, "The Relationship of Feature Drift Rate to Zonal Wind Velocity in the Northern Equatorial Belt of Jupiter I: Synoptic Scale Features," submitted to *Icarus*.

Phillips, M.M., Simon, Joshua D., Madore, Barry F.; **Penprase, B. E.**, (several co-authors omitted for space), 2013, “On the Source of the Dust Extinction in Type Ia Supernovae and the Discovery of Anomalously Strong Na I Absorption,” *Astrophysical Journal*, **779**, 38

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- Thomas, C.A., Trilling, D.E., Emery, J.P., Mueller, M., Hora, J.L., Benner, L.A.M., Bhattacharya, B., Bottke, W.F., Chesley, S., Delbo, M., Fazio, G., Harris, A.W., Mainzer, A., Mommert, M., Morbidelli, A., **Penprase, B.**, Smith, H.A., Spahr, T.B., and Stansberry, J.A., 2011, "ExploreNEOs. V. Average Albedo by Taxonomic Complex in the Near-Earth Asteroid Population," *Astronomical Journal*, **142**, 85.
- Penprase, B.E.**, Prochaska, J.X., Sargent, W.L.W, Toro Martinez, I.*, and Beeler, D.*, 2010, "Keck ESI Observations of Metal-Poor Damped Lyman-alpha Systems," *Ap. J.* **721**, 1.
- Bhattacharya, B., **Penprase, B.E.**, Tedesco, E.T., Meadows, V.S., Giorgini, J., Reach, W.T., Ryan, E.L., Tyler, S.R., Williams, G., and Soifer, B.T., 2010, "A Photometric Study of Asteroids in the Spitzer Space Telescope First Look Survey Ecliptic Plane Component", *Ap. J.*, **720**, 114.
- S. Guieu , L. M. Rebull , J. R. Stauffer , F. J. Vrba , A. Noriega-Crespo , T. Spuck, T. Roelofsen Moody , B. Sepulveda , C. Weehler , A. Maranto , D. M. Cole , N. Flagey , R. Laher , **B. Penprase** , S. Ramirez , S. Stolovy, 2010, "Spitzer Observations of IC 2118 ," *Ap. J.*, **720**, 46.
- Trilling, D.E., Mueller, M., Hora, J.L., Harris, A.W., Bhattacharya, B., Bottke, W.F., Chesley, S., Delbo, M., Emery, J.P., Fazio, G., Mainzer, A., **Penprase, B.**, Smith, H.A., Spahr, T.B., Stansberry, J.A., and Thomas, C.A., 2010, "ExploreNEOs. I. Description and First Results from the Warm Spitzer Near-Earth Object Survey", *A.J.*, **140**, 770.
- Tanvir, N. R.; Fox, D. B.; Levan, A. J.; Berger, E.; ..., **Penprase, B. E.**, 2009, "A γ -ray burst at a redshift of $z \sim 8.2$ ", 2009, *Nature*, **461**, Issue **7268**, pp. 1254-1257 (2009). (some co-authors removed for space)
- Gal-Yam, A., Nakar, E., Ofek, E.O., Cenko, S.B., Kulkarni, S.R., Soderberg, A.M., Harrison, F., Fox, D.B., Price, P.A., **Penprase, B.E.**, Frail, D.A., Atteia, J.L., Berger, E., Gladders, M., Mulchaey, J., 2008, "New Imaging and Spectroscopy of the Locations of Several Short-Hard Gamma-Ray Bursts", *Astrophysical Journal*, **686**, 408.
- Chandra, P., Cenko, S.B., Frail, D.A., Chevalier, R.A., Macquart, J, Kulkarni, S.R., Bock, D.C., Bertoldi, F., Kasliwal, M., Fox, D.B., Price, P.A., Berger, E., Soderberg, A.M., Harison, F., Gal-Yam, A., Ofek, E., Rau, A., Schmidt, B.P., Cameron, B.P., Cowie, L.L., Cowie, A., Roth, K.C., Dopita, M., Peterson, B., **Penprase, B.E.**, 2008, "A

Comprehensive Study of GRB 070125, A Most Energetic Gamma-Ray Burst”, *Astrophysical Journal*, **683**,924.

Britton, M., Velur, V., Law, N., Choi, P., and **Penprase, B.E.**, 2008, “CAMERA: a compact, automated, laser adaptive optics system for small aperture telescopes”, *SPIE Proc. Vol 7015*, 701516.

Cenko, S.B., Fox, D.B., **Penprase, B.E.**, Cucchiara, A., Price, P.A., Berger, E., Kulkarni, D.R., Harrison, F.A., Gal-Yam, A., Ofek, E.O., Rau, A., Chandra, P., Frail, D.A., Kasliwal, M., Schmidt, B.P., Soderberg, A.M., Cameron, P.B., and Roth, K.C., 2007, “GRB 070125: The First Long-Duration Gamma-ray Burst in a Halo Environment”, *Astrophysical Journal*, **677**,441.

Simon, J.D., Gal-Yam, A., **Penprase, B. E.**, Li, W., Quimby, R.M., Silverman, J.M., Allende Prieto, C., Wheeler, J.C., Filippenko, A.V., Toro Martinez, I.* , Beeler, D.J.* , 2007, “Constraints on Circumstellar Material Around the Type Ia Supernova 2007af”, *Astrophysical Journal (Letters)*, **671**, 25.

Berger, E., Fox, D.B., Price, P.A., Nakar, E., Gal-Yam, A., Holz, D.E., Schmidt, B.P., Cucchiara, A., Cenko, S.B., Kulkarni, S.R., Soderberg, A.M., Frail, D.A., **Penprase, B.E.**, Rau, A., Ofek, E., Burnell, S.J., Cameron, P.B., Cowie, L.L., Dopita, M.A., Hook, I., Peterson, B., Podsiadlowski, P., Roth, K.C., Rutledge, R.E., Sheppard, S.S., Songaila, A., 2007, “A New Population of High-Redshift Short-Duration Gamma Ray Bursts”, *Astrophysical Journal*, **664**, 1000-1010.

Price, P.A., Songaila, A., Cowie, L.L., Bell Burnell, J., Berger, E., Cucchiara, A., Fox, D.B., Hook, I., Kulkarni, S.R., **Penprase, B.**, Roth, K.C., and Schmidt, B., 2007, “Properties of a Gamma-Ray Burst Host Galaxy at $z \sim 5$ ”, *Astrophysical Journal (Letters)*, **663**, L57-60.

Ofek, E.O., Cenko, S.B., Gal-Yam, A., Fox, D.B., Nakar, E., Rau, A., Frail, D.A., Kulkarni, S.R., Price, P.A., Schmidt, B.P., Soderberg, A.M., Peterson, B., Berger, E., Sharon, K., Shemmer, O., **Penprase, B.E.**, Chevalier, R.A., Brown, P.J., Burrows, D.N., Gehrels, N., Harrison, F., Holland, S.T., Mangano, V., McCarthy, P.J., Moon, D.-S., Nousek, J.A., Persson, S.E., Piran, T., Sari, R., 2007, “GRB 060505: A Possible Short-Duration Gamma-Ray Burst in a Star Forming Region at a Redshift of 0.09”, *Astrophysical Journal*, **662**, 1129-1135.

Wainwright, C.* , Berger, E., and **Penprase, B.E.**, 2007, “A Morphological Study of Gamma-Ray Burst Host Galaxies”, *Astrophysical Journal*, **657**, 367-377.

Gal-Yam, A., Fox, D., Price, P., Davis, M., Leonard, D., Soderberg, A., Nakar, E., Ofek, E., Schmidt, B., Lewis, K., Peterson, B., Kulkarni, S., Berger, E., Cenko, B., Sari, R., Sharon, K., Frail, D., Gehrels, N., Nousek, J., Burrows, D., Mangano, V., Holland, S., Brown, P., Moon, D-S., Harrison, F., Piran, T., McCarthy, P., **Penprase, B.**, Chevalier, R. 2006, “A Novel Explosive Process is required for the g-ray burst GRB 060614”, *Nature*, **444**, 1053-1055.

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- Soderberg, A., Kulkarni, S.R., Nakar, E., Berger, E., Cameron, P.B., Fox, D.B., Frail, D., Gal-Yam, A., Sari, R., Cenko, S.B., Kasliwal, M., Chevalier, R.A., Piran, T., Price, P.A., Schmidt, B.P., Pooley, G., Moon, D-S., **Penprase, B.E.**, Ofek, E., Rau, A., Gehrels, N., Nousek, J.A., Burrows, D.N., Persson, S.E., McCarthy, P.J., 2006, "Relativistic ejecta from X-ray flash XRF 060218 and the rate of cosmic explosions", *Nature*, **442 (7016)**, p. 1014-1017.
- Penprase, B.E.**, Berger, E., Fox, D.B., Kulkarni, S.R., Kadish, S.* , Kerber, L.* , Schaefer, B., and Reed, M., 2006, "Spectroscopy of GRB 051111 at $z=1.54948$: Kinematics and Elemental Abundances of the GRB environment and Host Galaxy", *Ap. J.*, **646**, 358-368.
- Berger, E., **Penprase, B.E.**, Fox, D.B., Kulkarni, S.R., Hill, G., Schaefer, B., and Reed, M., 2006, "Fine-Structure FeII and SiII Absorption in the Spectrum of GRB 051111: Implications for the the Burst Environment", *submitted to the Astrophysical Journal Letters*. (astro-ph/0512280).
- Berger, E., **Penprase, B.E.**, Cenko, S.B., Kulkarni, S.R., Fox, D.B., Steidel, C.C., and Reddy, N.A., 2005, "Spectroscopy of GRB 050505 at $z=4.275$: a $\log N(\text{HI})=22.1$ DLA Host Galaxy and the Nature of the Progenitor", *Ap. J.*, **642**, 979-988.
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- Gal-Yam, V., Nakar, E., Ofek, E., Fox, D.B., Cenko, S.B., Kulkarni, S.R., Soderberg, A.M., Harrison, F., Price, P.A., **Penprase, B.E.**, Frail, D., Berger, E., Gladders, M., and Mulchaey, J., 2005, "The Progenitors of Short-Hard Gamma-Ray Bursts from an Extended Sample of Events", *Submitted to the Astrophysical Journal*, *astro-ph/0509891*.
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Liu, C.T., **Penprase, B.E.**, and 18 co-authors, 2014, "Maximizing LSST's Scientific Return: Ensuring Participation from Smaller Institutions," white paper for astronomical community.

Hedlund, A.*, Madore, B.F., **Penprase, B.E.**, and Choi, P., "High-Mass Star Formation in NGC6822: The Ultraviolet as a Tool for Identification," 2014 AAS meeting presentation.

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Major Public Talks and Media Appearances

Astronomy 2017 – Singapore Art-Science Museum, "Chasing Cosmic Explosions" talk about ZTF and time-domain astronomy.

Benjamin Dean Lecture - California Academy of Sciences, December 9, 2013. Sold-out talk discussing "The Power of Stars" with new visualizations created with the CAS staff in their digital planetarium theatre.

"The Universe - Ancient Mysteries Solved" History Channel 2 (2014) - Appeared in two episodes - one on Stonehenge and one on the Egyptian Pyramids.

Griffith Observatory FOTO talk - Feb. 28, 2011. Lecture based on the “The Power of Stars” included over 200 people and was sold out.

“Known Universe - Ancient Observers” - National Geographic Channel (2010); several clips were included on the broadcast international version - can be viewed at <http://natgeotv.com/ca/known-universe/videos>

Huntington Library Scholarly Books Lecture Series, June 20, 2011 - “Power of Stars” book talk with full house and over 200 attendees.