

John Caleb Barentine

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Education

Ph.D. Astronomy, University of Texas at Austin, 2013

Thesis: [“The Role Of Gas In Galaxy Evolution: Infall, Star Formation, And Internal Structure”](#)

M.A. Astronomy, University of Texas at Austin, 2008

Thesis: [“A Comparative Astrochemical Study of the High Mass Protostellar Objects NGC 7538 IRS 1 and IRS 9”](#)

M.S. Physics, Colorado State University, 2002

Thesis: [“A Diagnostic Analysis Of A SciTech STAR Class 0.5m Telescope For The Purpose Of High Precision Photometry”](#)

B.S. Physics, University of Arizona, 1998

Minor: Astronomy

Employment

Dark Sky Consulting, LLC

Executive Officer and Principal Consultant (2021–present)

Provide an array of consulting and professional services including dark-sky certification advice, outdoor lighting policies, lighting audits and night sky quality measurement

International Dark Sky Association

Director of Public Policy (2018–2021)

Led IDA dark skies and outdoor lighting public policy initiatives

Served as organizational liaison to the international artificial light at night scientific research community

Director of Conservation (2018)

Responsible for the organization’s overall conservation strategy and programmatic work

Program Manager (2013–2018)

Managed the International Dark Sky Places certification program

University of Wisconsin at Madison, Department of Astronomy

Postdoctoral Researcher (2013)

Research Intern (2011–2012)

Abundances of Galactic High- and Intermediate-Velocity Clouds from ultraviolet spectroscopy (supervisor: Dr. Bart Wakker)

University of Texas at Austin, Department of Astronomy

Graduate Teaching Assistant (2008–2012)

Graduate Research Assistant (2006–2011)

High-resolution mid-infrared spectroscopy of high-mass starforming regions (supervisor: Prof. John Lacy)

Secular evolution of massive disk galaxies (supervisor: Prof. John Kormendy)

Apache Point Observatory

Observer, Sloan Digital Sky Survey (2004–2006)

Operation of the SDSS 2.5m telescope; development of procedures and documentation; quality assurance

Observing Specialist I/II, Astrophysical Research Consortium (2001–2004)

Engineering, operations, and remote user support, ARC 3.5-meter telescope

Engineering, basic maintenance and observing, New Mexico State University 1-meter telescope

APO liaison to the University of Colorado Center for Astrophysics and Space Astronomy (CASA) for development of the Near Infrared Camera Fabry-Pérot Spectrometer (NIC-FPS)

Colorado State University, Department of Physics

Graduate Teaching Assistant (1999–2001)

Graduate Research Assistant (1999)

Scanning Hall probe microscopy of magnetic flux vortices in superconducting metals (supervisor: Prof. Stuart Field)

Intel Corporation Digital Imaging Operation

Summer Intern (1996)

Research and characterization of consumer digital cameras; design and specification work on the Intel Pocket PC Camera (supervisor: Mr. Brian Finkel)

National Solar Observatory

Research Assistant (1995–1999)

Reduction and archival of helioseismic data obtained at the South Pole during the austral summer of 1994–1995 (supervisor: Dr. Stuart Jeffries)

Reduction and analysis of He I 10830Å solar imaging data (supervisor: Dr. Karen Harvey)

Acoustic holography of terrestrial lightning strikes with application to solar far-side imaging (supervisor: Dr. Charlie Lindsay)

Publications

ORCID: [0000-0002-7042-068X](https://orcid.org/0000-0002-7042-068X)

[Google Scholar profile](#)

[Scopus profile](#)

[NASA Astrophysics Data System \(ADS\)](#)

[arXiv/astro-ph](#)

h-index: 43

i10-index: 60

Books

Mystery of the Ashen Light of Venus: Investigating a 400-Year-Old Phenomenon (Springer International Publishing, 2021)

Uncharted Constellations (Springer International Publishing, 2016)

The Lost Constellations (Springer International Publishing, 2015)

Book Chapters

A Dignity That Insures Their Perpetuation: Obsolete Constellations and the Making of the Modern Night Sky. *Yearbook of Astronomy 2021* (Pen and Sword Books, 2020).

Articles

Barentine, J. (2022). Night sky brightness measurement, quality assessment and monitoring. *Nature Astronomy*. [10.1038/s41550-022-01756-2](https://doi.org/10.1038/s41550-022-01756-2)

Kocifaj, M., Kundracik, F., Bará, S., **Barentine, J.**, and Wallner, S. (2022). Nighttime Atmospheric Scattering Phase Function Derived from the Scattered Light of a Laser Beam. *Geophysical Research Letters*, e2022GL098608. [10.1029/2022gl098608](https://doi.org/10.1029/2022gl098608)

Barentine, J., Heim, J., Venkatesan, A., Lowenthal, J., Vidaurri, M. (2022). Re-imagining Near-Earth Space Policy in a Post-COVID World. *Virginia Policy Review*, 15(1), 58-86. [10.5281/zenodo.6903582](https://doi.org/10.5281/zenodo.6903582)

Elvidge, C., Zhizhin, M., Keith, D., Miller, S., Hsu, F., Ghosh, T., Anderson, S., Monrad, C., Bazilian, M., Taneja, J., Sutton, P., **Barentine, J.**, Kowalik, W., Kyba, C., Pack, D., and Hammerling, D. (2022). The VIIRS Day/Night Band: A Flicker Meter in Space? *Remote Sensing*, 14(6), 1316. [10.3390/rs14061316](https://doi.org/10.3390/rs14061316)

Kocifaj, M. and **Barentine, J.** (2021). Air pollution mitigation can reduce the brightness of the night sky in and near cities. *Nature Scientific Reports*, 11:14622. [10.1038/s41598-021-94241-1](https://doi.org/10.1038/s41598-021-94241-1)

Barentine, J., Walczak, K., Gyuk, G., Tarr, C., and Longcore, T. (2021). A Case for a New Satellite Mission for Remote Sensing of Night Lights. *Remote Sensing*, rs13122294. [10.3390/rs13122294](https://doi.org/10.3390/rs13122294)

Fryc, I., Bará, S., Aubé, M., **Barentine, J.**, & Zamorano, J. (2021). On the Relation between the Astronomical and Visual Photometric Systems in Specifying the Brightness of the Night Sky for Mesopically Adapted Observers. In LEUKOS (pp. 1–12). Informa UK Limited. [10.1080/15502724.2021.1921593](https://doi.org/10.1080/15502724.2021.1921593)

Kocifaj, M., Kundracik, F., **Barentine, J.** and Bará, S. (2021). The proliferation of space objects is a rapidly increasing source of artificial night sky brightness. *Monthly Notices of the Royal Astronomical Society: Letters*, 504(1), L40-L44. [10.1093/mnrasl/slabo30](https://doi.org/10.1093/mnrasl/slabo30)

Kyba, C., Ruby, A., Kuechly, H., Kinzey, B., Miller, N., Sanders, J., **Barentine, J.**, Kleinodt, R., & Espey, B. (2020). Direct measurement of the contribution of street lighting to satellite observations of nighttime light emissions from urban areas. *Lighting Research & Technology*, 53(3), 189-211. [10.1177/1477153520958463](https://doi.org/10.1177/1477153520958463)

Barentine, J. (2020). Who speaks for the night? The regulation of light pollution in the ‘Rights of Nature’ legal framework. *International Journal of Sustainable Lighting*, 22(2), 28-36. [No doi](#).

Barentine, J., et al. (2020). Recovering the city street lighting fraction from skyglow measurements in a large-scale municipal dimming experiment. *Journal of Quantitative Spectroscopy and Radiative Transfer*, 253, 107120. [10.1016/j.jqsrt.2020.107120](#)

Bará, S., Aubé, M., **Barentine, J.**, & Zamorano, J. (2020). Magnitude to luminance conversions and visual brightness of the night sky. *Monthly Notices of the Royal Astronomical Society*, 492(2), 2429-2437. [10.1093/mnras/staa323](#)

Kyba, C., Pritchard, S., Ekirch, A. R., Eldridge, A., Jechow, A., Preiser, C., Kunz, D., Henckel, D., Hölker, F., **Barentine, J.**, Berge, J., Meier, J., Gwiazdzinski, L., Spitschan, M., Milan, M., Bach, S., Schroer, S., & Straw, W. (2020). Night Matters—Why the Interdisciplinary Field of “Night Studies” Is Needed. *J — Multidisciplinary Scientific Journal*, 3(1), 1-6. [10.3390/j3010001](#)

Hyde, E., Frank, S., **Barentine, J.**, Kuechly, H., & Kyba, C. (2019). Testing for changes in light emissions from certified International Dark Sky Places. *International Journal of Sustainable Lighting*, 21(1), 11-19. [10.26607/ijsl.v21i1.92](#)

Barentine, J., Walker, C. E., Kocifaj, M., Kundracik, F., Juan, A., Kanemoto, J., & Monrad, C. K. (2018). Skyglow changes over Tucson, Arizona, resulting from a municipal LED street lighting conversion. *Journal of Quantitative Spectroscopy and Radiative Transfer*, 212, 10–23. [10.1016/j.jqsrt.2018.02.038](#)

Gibson, J., Stencel, R., Ketzbeck, W., **Barentine, J.**, Coughlin, J., Leadbeater, R., & Saurage, G. (2018). Structure in the disc of epsilon Aurigae – analysis of ARCES and TripleSpec spectra from the 2010 eclipse. *Monthly Notices of the Royal Astronomical Society*, 479(2), 2161-2182. [10.1093/mnras/sty1552](#)

Barentine, J. (2016). Going for the Gold: Quantifying and Ranking Visual Night Sky Quality in International Dark Sky Places. *International Journal of Sustainable Lighting*, 18, 9–15. [10.26607/ijsl.v18i0.16](#)

Doty, S. D., Doty, S. L., Cochran, J., Lacy, J., **Barentine, J.**, & Field, R. (2014). Warm C₂H₂ toward NGC 7538 IRS9: Grain Surface Origin. *International Journal of Astronomy and Astrophysics*, 4(3), 479-490. [10.4236/ijaa.2014.43044](#)

Adams, J., Simon, J., Fabricius, M., van den Bosch, R., **Barentine, J.**, Bender, R., Gebhardt, K., Hill, G., Murphy, J., Swaters, R., Thomas, J., & van de Ven, G. (2014). Dwarf galaxy dark matter density profiles inferred from stellar and gas kinematics. *Astrophysical Journal*, 789(1), 63. [10.1088/0004-637x/789/1/63](#)

Barentine, J. and Lacy, J. (2012). A Comparative Astrochemical Study of the High Mass Protostellar Objects NGC 7538 IRS 9 and IRS 1. *Astrophysical Journal*, 757(2), 111. [10.1088/0004-637X/757/2/111](#)

Berry, M., Ivezić, Ž., Sesar, B., Jurić, M., Schlafly, E., Bellovary, J., Finkbeiner, D., Vrbanec, D., Beers, T., Brooks, K. J., Schneider, D., Gibson, R., Kimball, A., Jones, L., Yoachim, P., Krughoff, S., Connolly, A., Loebman, S., Bond, N., Schlegel, D., Dalcanton, J., Yanny, B., Majewski, S., Knapp, G., Gunn, J., Smith, J.A., Fukugita, M., Kent, S., **Barentine, J.**, Krzesinski, J., & Long, D. (2012). The Milky Way Tomography with the Sloan Digital Sky Survey. IV. Dissecting Dust. *Astrophysical Journal*, 757(2), 166. [10.1088/0004-637x/757/2/166](#)

Barentine, J. and Kormendy, J. (2012). Two Pseudobulges in the ‘Boxy Bulge’ Galaxy NGC 5746. *Astrophysical Journal*, 754(2), 140. [10.1088/0004-637X/754/2/140](#)

Kormendy, J., and **Barentine, J.** (2010). Detection of a Pseudobulge Hidden Inside the ‘Box-shaped Bulge’ of NGC 4565. *Astrophysical Journal*, 715(2), L176. [10.1088/2041-8205/715/2/L176](#)

Bond, N., Ivezić, Ž., Sesar, B., Jurić, M., Munn, J. A., Kowalski, A., Loebman, S., Roškar, R., Beers, T., Dalcanton, J., Rockosi, C., Yanny, B., Newberg, H., Allende Prieto, C., Wilhelm, R., Lee, Y., Sivarani, T., Majewski, S. R., Norris, J., Bailer-Jones, C., Re Fiorentin, P., Schlegel, D., Uomoto, A., Lupton, R., Knapp, G., Gunn, J., Covey, K., Smith, J.A., Miknaitis, G., Doi, M., Tanaka, M., Fukugita, M., Kent, S., Finkbeiner, D., Quinn, T., Hawley, S., Anderson, D., Kiuchi, F., Chen, A., Bushong, J., Sohi, H., Haggard, D., Kimball, A., McGurk, R., **Barentine, J.**, Brewington, H., Harvanek, M., Kleinman, S.,

- Krziesinski, J., Long, D., Nitta, A., Snedden, S., Lee, B., Pier, J., Harris, H., Brinkmann, J., & Schneider, D. (2010). The Milky Way Tomography with the Sloan Digital Sky Survey. III. Stellar Kinematics. *Astrophysical Journal*, 716(1), 1-29. [10.1088/0004-637x/716/1/1](https://doi.org/10.1088/0004-637x/716/1/1)
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- Jurić, M., Ivezić, Ž., Brooks, A., Lupton, R., Schlegel, D., Finkbeiner, D., Padmanabhan, N., Bond, N., Sesar, B., Rockosi, C., Knapp, G., Gunn, J., Sumi, T., Schneider, D., **Barentine, J.**, Brewington, H., Brinkmann, J., Fukugita, M., Harvanek, M., Kleinman, S., Krzesinski, J., Long, D., Neilsen, E., Nitta, A., Snedden, S., & York, D. (2008). The Milky Way Tomography with SDSS. I. Stellar Number Density Distribution. *Astrophysical Journal*, 673(2), 864-914. [10.1086/523619](https://doi.org/10.1086/523619)
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- Distances to Galactic High-Velocity Clouds. I. Cohen Stream, Complex GCP, Cloud g1. *Astrophysical Journal*, 672(1), 298-319. [10.1086/523845](https://doi.org/10.1086/523845)
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- Schneider, D., Hall, P., Richards, G., Strauss, M., Vanden Berk, D., Anderson, S., Brandt, W., Fan, X., Jester, S., Gray, J., Gunn, J., SubbaRao, M., Thakar, A., Stoughton, C., Szalay, A., Yanny, B., York, D., Bahcall, N. A., **Barentine, J.**, Blanton, M., Brewington, H., Brinkmann, J., Brunner, R., Castander, F., Csabai, I., Frieman, J., Fukugita, M., Harvanek, M., Hogg, D., Ivezić, Ž., Kent, S., Kleinman, S., Knapp, G., Kron, R., Krzesinski, J., Long, D., Lupton, R., Nitta, A., Pier, J., Saxe, D., Shen, Y., Snedden, S., Weinberg, D., & Wu, J. (2007). The Sloan Digital Sky Survey Quasar Catalog. IV. Fifth Data Release. *Astronomical Journal*, 134(1), 102-117. [10.1086/518474](https://doi.org/10.1086/518474)
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- Belokurov, V., Evans, N., Bell, E., Irwin, M., Hewett, P., Kuposov, S., Rockosi, C., Gilmore, G., Zucker,

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Reviews

- Barentine, J.** (2019). Methods for Assessment and Monitoring of Light Pollution around Ecologically Sensitive Sites. *Journal of Imaging*, 5(5), 54. [10.3390/jimaging5050054](https://doi.org/10.3390/jimaging5050054)

Proceedings

- Barentine, J.**, & Kormendy, J. (2009). "[Detection of a Distinct Pseudobulge Hidden Inside the 'Box-Shaped Bulge' of NGC 4565](#)" in *Galaxy Evolution: Emerging Insights and Future Challenges*, ASP Conference Series, 419,149-153.
- Barentine, J.**, Wakker, B., York, D., Howk, J., Wilhelm, R., van Woerden, H., Peletier, R., Beers, T., Richter, P., Ivezić, Ž., & Schwarz, U. "[Distances to the High Velocity Clouds: A Forty-Year Mystery on the Way to Solution](#)" in *New Horizons in Astronomy: Frank N. Bash Symposium 2007*, ASP Conference Series, 393, 179-182.

Selected Presentations

- "[Who speaks for the night? The regulation of light pollution in the 'Rights of Nature' legal framework](#)" (contributed talk), 5th International Conference on Artificial Light at Night, online (2020)
- "[The Things We Have Always Known': Design and Evaluation of Dark-Sky Friendly Lighting](#)" (invited talk), Light Pollution: Theory, Modeling and Measurement, Hajmás, Hungary (2019)
- "[A Large-Scale Municipal Street Lighting Dimming Experiment](#)" (contributed talk), Light Pollution: Theory, Modeling and Measurement, Hajmás, Hungary (2019)
- "[Do International Dark Sky Places Stay Dark After Accreditation?](#)" (poster), 5th International Conference on Artificial Light at Night, Snowbird, Utah (2018)
- "[The Consortium for Dark Sky Studies: A Transdisciplinary Institute for Understanding the Loss of the Night](#)" (poster with D. Kieda, S. Goldsmith, B. Foott and J. Muir), AAS 231, Washington, DC (2018)
- "[Skyglow Changes Over Tucson, Arizona, Resulting From A Municipal LED Street Lighting Conversion](#)" (contributed talk), Light Pollution: Theory, Modeling and Measurement, Cellers, Spain (2017)
- "[Going for The Gold: Quantifying and Ranking Visual Night Sky Quality in International Dark Sky Places](#)", (poster) 4th International Conference on Artificial Light at Night, Cluj-Napoca, Romania (2016)

- “Long-Term Optical and Near-Infrared Spectroscopic Monitoring of ϵ Aurigae During the 2009-11 Eclipse” (poster +12 coauthors), AAS 219, Austin, Texas (2012)
- “High Resolution Molecular Absorption Line Spectroscopy Of The Ultraluminous Infrared Galaxy NGC 4418” (poster with J. Lacy), AAS 211, Austin, Texas (2008)
- “A possible rock art depiction of the AD 1006 supernova event in the American Southwest”, AAS 208, Calgary, Canada (2006)
- “A Gamma Ray Burst Fields Study In The Near-infrared” (poster with F. Hearty), AAS 208, Calgary, Canada (2006)
- “The APO-PSI TNO Survey” (poster with G. Esquerdo, C. Neese), AAS 204, Denver, Colorado (2004)
- “Near-Infrared Observations of Barnard’s Merope Nebula (IC 349)” (poster with G. Esquerdo), AAS 203, Atlanta, Georgia (2004)
- “A Characterization Of The GNAT SciTech STAR Class 0.5m Prototype Telescope” (poster with R. Culver), AAS 200, Albuquerque, New Mexico (2002)
- “Properties and Time Variability of Solar Activity Structures” (poster with K. Harvey), AAS Solar Physics Division 31, Lake Tahoe, Nevada (2000)

Education and Public Outreach

Instruction

- AST 301: Introduction to Astronomy, UT, Spring 2013 (teaching assistant)
- AST 307: Introductory Astronomy, UT, Fall 2012
- AST 309N: The Lives and Deaths of Stars, UT, Spring 2012 (teaching assistant)
- AST 352K: Stellar Astronomy, UT, Fall 2011 (teaching assistant)
- AST 152M: Stellar Astronomy Laboratory, UT, Fall 2011 (teaching assistant)
- AST 351: Astronomical Instrumentation, UT, Fall 2008 (teaching assistant)
- AA 101: Astronomy Laboratory, CSU, Fall 2000–Summer 2001 (instructor of record)
- PH 315: Modern Physics Laboratory, CSU, Spring 2000 (teaching assistant)
- PH 110: Descriptive Physics, CSU, Fall 1999 (teaching assistant)

Advising

- Graduate student: José Robles Rodríguez (Universidad Complutense de Madrid Ph.D. examining committee, 2021)
- Graduate student: Gloria Kaasch-Buerger (University of Colorado at Denver M.S. committee, 2015–16)
- Undergraduate student: Amy Juan (NOAO; 2014)
- Graduate student: John Kanemoto (NOAO; 2014)
- Undergraduate student: Justin Hickey (UT; 2012–13)

Outreach

- Apache Point Observatory (community outreach activities, 2001–2006)
- Kitt Peak National Observatory Visitor Center (Docent, 1994–1997)
- Flandrau Planetarium, University of Arizona (Telescope Operator, 1994–1997)

Service

[IAU Centre for the Protection of the Dark and Quiet Sky from Satellite Constellation Interference Community Engagement Hub](#) (Co-lead, 2022-present)
[Light Pollution: Theory, Modeling and Measurements Scientific Organizing Committee](#) (2022)
[SATCON₂ Community Engagement Working Group](#) (2021)
[SATCON₁ Satellite Constellation Metrics Working Group](#) (2020)
[Dark and Quiet Skies for Science and Society Scientific Organizing Committee](#) (2020–2022)
[Artificial Light At Night Research Literature Database](#) (Co-curator, 2014–present)
[Journal of Dark Sky Studies \(JDSS\) Editorial Board](#) (2020–present)
[International Astronomical Union Commission B7: Commission Protection of Existing and Potential Observatory Sites](#) (Member, 2018–present)
[American Astronomical Society Committee on Light Pollution, Radio Interference and Space Debris](#) (Member, 2017–present)
[University of Utah Consortium for Dark Sky Studies Governing Committee](#) (Founding Member, 2017–present)
[Colorado Plateau Dark Sky Cooperative Steering Committee](#) (Member, 2017–present)
[International Union for Conservation of Nature Dark Skies Advisory Group](#) (Member, 2016–2018; 2021)

Professional Affiliations

[American Association for the Advancement of Science](#) (Member, 1993–present)
[International Astronomical Union](#) (Member, 2018–present)
[American Astronomical Society](#) (Junior Member, 2000–2012; Full Member, 2013–present)
 [Historical Astronomy Division](#) (Member, 2015–present)
[Royal Astronomical Society](#) (Fellow, 2018–present)
[Illuminating Engineering Society](#) (Associate Member, 2021–present)

Honors

Board of Visitors Graduate Student Endowment Fund Scholarship (UT Austin, 2008–09 and 2011–12)
Asteroid [\(14505\) Barentine](#) (2007)
2nd Place, National Outstanding Young Astronomer Award, Astronomical League (1994)
1st Place, Physical Sciences Division, Student Poster Competition, AAAS Annual Meeting (San Francisco, CA, 1994)
Arizona delegate, Honors Research Program, U.S. Dept. of Energy, Brookhaven National Laboratory (Upton, NY, 1994)