

# MICHAEL A. GULLY-SANTIAGO

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## Education

**Ph. D., Astronomy** University of Texas at Austin · Austin, TX · 8/2008–5/2015

Advisor: D.T. Jaffe (Chair, Department of Astronomy)

Dissertation: "Innovative Technologies for and Observational Studies of Star and Planet Formation"

**B. A., Astronomy & Physics** Boston University · Boston, MA · 9/2003–5/2007

College Prize for Excellence in Astronomy

## Awards

University of Texas at Austin Department of Astronomy, David Benfield Memorial fellowship, 2014

NASA Graduate Student Research Program Fellowship, JPL Microdevices Lab, 2010-2013

University of Texas at Austin Dean's Prestigious Fellowship Supplement, 2010 & 2011

## Research Experience and Technical Skills

**Postdoctoral Research** Kavli Institute for Astronomy and Astrophysics · Beijing, China · 10/2015–10/2016

**Forward modeling IGRINS spectra:** Analysis of high resolution, high bandwidth near-IR spectroscopy of young stars with collaborator G. Herczeg

**Si diffractive optics group, Dept. of Astronomy** University of Texas at Austin · Austin, TX · 9/2008–6/2014

Microelectronics Research Center · Austin, TX · 9/2008–6/2013

Center for Nano and Molecular Science · Austin, TX · 9/2008–9/2013

**E-beam group, Microdevices Laboratory** NASA Jet Propulsion Lab · Pasadena, CA · 9/20010–9/2013

**Magellan Telescope** Las Campanas Observatory · La Serena, Chile · 2010–2012

## First Author Publications

- [1] **Gully-Santiago, M. A.**, G. J. Herczeg, I. Czekala, G. Somers, K. Grankin, K. R. Covey, J. F. Donati, S. H. P. Alencar, G. A. J. Hussain, B. J. Shappee, G. N. Mace, J.-J. Lee, T. W.-S. Holoien, J. Jose, and C.-F. Liu, "Placing the Spotted T Tauri Star LkCa 4 on an HR Diagram," *The Astrophysical Journal*, vol. 836, p. 200, Feb. 2017.
- [2] **Gully-Santiago, M.**, D. T. Jaffe, and V. White, "Optical characterization of gaps in directly bonded Si compound optics using infrared spectroscopy," *Applied Optics*, vol. 54, p. 10177, Dec. 2015.
- [3] **Gully-Santiago, M. A.**, D. T. Jaffe, C. B. Brooks, D. W. Wilson, and R. E. Muller, "High performance Si immersion gratings patterned with electron beam lithography," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 9151, Jul. 2014, p. 5.
- [4] **Gully-Santiago, M.**, W. Wang, C. Deen, and D. Jaffe, "Near-infrared metrology of high-performance silicon immersion gratings," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 8450, Sep. 2012.

- [5] **Gully-Santiago, M. A.**, K. N. Allers, and D. T. Jaffe, "Confirmation and Characterization of Young Disk-Bearing Brown Dwarfs and sub-Brown Dwarfs," in *16th Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun*, ser. Astronomical Society of the Pacific Conference Series, C. Johns-Krull, M. K. Browning, and A. A. West, Eds., vol. 448, Dec. 2011, p. 633.
- [6] **Gully-Santiago, M.**, W. Wang, C. Deen, D. Kelly, T. P. Greene, J. Bacon, and D. T. Jaffe, "High-performance silicon grisms for 1.2-8.0  $\mu\text{m}$ : detailed results from the JWST-NIRCam devices," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 7739, Jul. 2010.

## Contributing Author Publications

- [1] C. Deen, **Gully-Santiago, M.**, W. Wang, J. Pozderac, D. Mar, and D. Jaffe, "A Grism Design Review and the as-built performance of the silicon grisms for JWST-NIRCAM," *ArXiv e-prints*, Nov. 2016.
- [2] G. J. Herczeg, S. Dong, B. J. Shappee, P. Chen (#38472 #24179, L. A. Hillenbrand, J. Jose, C. S. Kochanek, J. L. Prieto, K. Z. Stanek, K. Kaplan, T. W.-S. Holoien, S. Mairs, D. Johnstone, **Gully-Santiago, M.**, Z. Zhu, M. C. Smith, D. Bersier, G. D. Mulders, A. V. Filippenko, K. Ayani, J. Brimacombe, J. S. Brown, M. Connelley, J. Harmanen, R. Itoh, K. S. Kawabata, H. Maehara, K. Takata, H. Yuk, and W. Zheng, "The Eruption of the Candidate Young Star ASASSN-15QI," *The Astrophysical Journal*, vol. 831, p. 133, Nov. 2016.
- [3] G. Mace, H. Kim, D. T. Jaffe, C. Park, J.-J. Lee, K. Kaplan, Y. S. Yu, I.-S. Yuk, M.-Y. Chun, S. Pak, K.-M. Kim, J.-E. Lee, C. A. Sneden, M. Afsar, M. D. Pavel, H. Lee, H. Oh, U. Jeong, S. Park, B. Kidder, H.-I. Lee, H. A. Nguyen Le, J. McLane, **Gully-Santiago, M.**, J. S. Oh, S. Lee, N. Hwang, and B.-G. Park, "300 nights of science with IGRINS at McDonald Observatory," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Proc. of the SPIE, vol. 9908, Aug. 2016, p. 99080C.
- [4] S. Kendrew, C. Deen, N. Radziwill, S. Crawford, J. Gilbert, **Gully-Santiago, M.**, and P. Kubánek, "The first SPIE software Hack Day," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 9152, Jul. 2014, p. 2.
- [5] C. B. Brooks, **Gully-Santiago, M.**, M. Grigas, and D. T. Jaffe, "New metrology techniques improve the production of silicon diffractive optics," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 9151, Jul. 2014, p. 1.
- [6] D. T. Jaffe, S. Barnes, C. Brooks, **Gully-Santiago, M.**, S. Pak, C. Park, and I. Yuk, "GMTNIRS (Giant Magellan Telescope Near-Infrared Spectrograph): optimizing the design for maximum science productivity and minimum risk," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 9147, Jul. 2014, p. 22.
- [7] C. Park, D. T. Jaffe, I.-S. Yuk, M.-Y. Chun, S. Pak, K.-M. Kim, M. Pavel, H. Lee, H. Oh, U. Jeong, C. K. Sim, H.-I. Lee, H. A. Nguyen Le, J. Strubhar, **Gully-Santiago, M.**, J. S. Oh, S.-M. Cha, B. Moon, K. Park, C. Brooks, K. Ko, J.-Y. Han, J. Nah, P. C. Hill, S. Lee, S. Barnes, Y. S. Yu, K. Kaplan, G. Mace, H. Kim, J.-J. Lee, N. Hwang, and B.-G. Park, "Design and early performance of IGRINS (Immersion Grating Infrared Spectrometer)," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 9147, Jul. 2014, p. 1.
- [8] V. Joergens, G. Herczeg, Y. Liu, I. Pascucci, E. Whelan, J. Alcalá, K. Biazzo, G. Costigan, **Gully-Santiago, M.**, T. Henning, A. Natta, E. Rigliaco, M. V. Rodríguez-Ledesma, A. Sicilia-Aguilar, J. Tottle, and S. Wolf, "Disks, accretion and outflows of brown dwarfs," *Astronomische Nachrichten*, vol. 334, p. 159, Feb. 2013.
- [9] J.-Y. Han, I.-S. Yuk, K. Ko, H. Oh, J. Nah, J. S. Oh, C. Park, S. Lee, K.-M. Kim, M.-Y. Chun, D. T. Jaffe, S. Pak, and **Gully-Santiago, M.**, "Alignment based on a no adjustment philosophy for the Immersion Grating Infrared Spectrometer (IGRINS)," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 8550, Dec. 2012.
- [10] W. Wang, **Gully-Santiago, M.**, C. Deen, D. J. Mar, and D. T. Jaffe, "Manufacturing of silicon immersion gratings for infrared spectrometers," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 7739, Jul. 2010.
- [11] S. Lee, I.-S. Yuk, H. Lee, W. Wang, C. Park, K.-J. Park, M.-Y. Chun, S. Pak, J. Strubhar, C. Deen, **Gully-Santiago, M.**, J. Rand, H. Seo, J. Kwon, H. Oh, S. Barnes, J. Lacy, J. Goertz, W.-K. Park, T.-S. Pyo, and D. T. Jaffe, "GMTNIRS (Giant Magellan Telescope near-infrared spectrograph): design concept," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 7735, Jul. 2010.

- [12] I.-S. Yuk, D. T. Jaffe, S. Barnes, M.-Y. Chun, C. Park, S. Lee, H. Lee, W. Wang, K.-J. Park, S. Pak, J. Strubhar, C. Deen, H. Oh, H. Seo, T.-S. Pyo, W.-K. Park, J. Lacy, J. Goertz, J. Rand, and **Gully-Santiago, M.**, "Preliminary design of IGRINS (Immersion GRating INfrared Spectrograph)," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 7735, Jul. 2010.
- [13] T. Greene, C. Beichman, **Gully-Santiago, M.**, D. Jaffe, D. Kelly, J. Krist, M. Rieke, and E. H. Smith, "NIRCam: development and testing of the JWST near-infrared camera," in *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, ser. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, vol. 7731, Jul. 2010.

## 🔊 Talks and Conference Participation

*upcoming* Talk, Fundamental properties of young stars, KIPAC, Stanford University, CA, 3/2017

Talk, Absolute stellar ages and planet formation timescales, Bay Area Exoplanets, NASA Ames, CA, 3/2017

Talk, Measuring Fundamental Properties of Young Stars, Columbia U., NYC, NY, 11/2016

Talk, Measuring Fundamental Properties of Young Stars, Simons CCA, NYC, NY, 11/2016

Talk, Measuring Fundamental Properties of Young Stars, Boston U., Boston, MA 11/2016

Talk, Measuring Fundamental Properties of Young Stars, KIAA Beijing, China, 9/2016

Talk, Python for astronomy, Beijing Python Meetup, China, 8/2016

Poster, Measurement of starspot properties, Cool Stars 19, Uppsala, Sweden 6/2016

Talk, High Resolution Spectroscopy with IGRINS, Seoul, Korea, 11/2015

Attendee, Astro Data Hack Week, Seattle, WA, 9/2014

Poster, SPIE Astronomical Telescopes and Instrumentation, Montreal, QC, 6/2014

Poster, PPVI, Heidelberg, Germany, 7/2013

Talk, Star Formation Lunch, Jet Propulsion Lab, Pasadena, CA, 6/2013

**Poster, Award winner- 3<sup>rd</sup>/45**, Nano Night, Center for Nano- and Molecular Science, Austin, TX, 3/2013

Poster, McDonald Observatory Board of Visitors meeting, Austin, TX, 2/2013

**Invited Talk**, SPIE Astronomical Telescopes and Instrumentation, Amsterdam, NL, July, 2012

Poster, Cool Stars 17, Barcelona, Spain, June 2012

Attendee, American Astronomical Society meeting, Austin, TX, Jan, 2012

Talk, Very Low Mass Stars and Brown Dwarfs, ESO, Garching, Germany, 10/2011

Attendee, National Society of Black and Hispanic Physicists, Austin, TX, 9/2011

Poster, Cool Stars 16, Seattle, WA, 9/2010

Poster, SPIE Astronomical Telescopes and Instrumentation, San Diego, CA, 6/2010

## + Teaching, Service, Leadership

**Statistical computing tutorial leader** Kavli Institute for Astronomy & Astrophysics · Beijing, China · 2015–2016

**Mentor for undergraduate student, A. Turbyfill** University of Texas at Austin · Austin, TX · 2013–2014

**Graduate Student Representative** University of Texas at Austin Department of Astronomy · 6/2011–6/2012

Elected by majority vote of peers · Served on graduate admissions committee

Liaison to faculty, attended faculty meetings · Delegate for University-wide Graduate Student Assembly

**Faculty member** Clay Center Observatory at the Dexter & Southfield Schools · Brookline, MA · 6/2007–6/2008

**Adult and continuing education instructor** Brookline Adult Education · Brookline, MA · 6/2005–6/2008

**Night lab teaching assistant** Boston University · Boston, MA · 2006–2007

## **Public Outreach and Media Appearances**

**Guest, They Blinded Me with Science, a science podcast** KVRX, 91.7FM · Austin, TX · 12/2012

“Discovery and characterization of brown dwarfs”

**Host, They Blinded Me with Science, a science podcast** KVRX, 91.7FM · Austin, TX · 5/2013–5/2014

Successfully procured seed funding from College of Natural Sciences to establish podcast

Produced 30 original podcasts with > 3000 collective downloads and plays

Recruited guests, conducted interviews, edited audio files, managed digital content, authored descriptions

### **Public talks**

**Invited talk**, McDonald Observatory Board of Visitors meeting, Austin, TX, 2/2012

“High resolution infrared spectroscopy with IGRINS”

Science Under the Stars, Brackenridge Field Lab, Austin, TX, 12/2012

“Exploring birth-sites of our Galactic neighborhood”

**Interactive museum-style educational installation** Department of Astronomy · Austin, TX · 7/2013–9/2014

## **Unique coursework or independent study**

**Statistical Modeling II, Prof. James Scott** Statistics Department · 1/2014–5/2014

**Statistics, Data Mining and Machine Learning in Astronomy** Independent study · 1/2014–8/2014

## **>\_ Computer Skills**

**Languages** Python (pandas and pydata ecosystem), Jupyter Notebooks, Bash, IDL, Excel

**Version Control and Writing** `git`, ,  $\text{\LaTeX}$ , `conda`

**OS** , 

**Podcast production** Audacity

**Exposure to** HTML, CSS, D3.js, Jekyll, Travis CI, Docker

**Evangelist for** Data Science, Open Science, Reproducibility