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PROFESSIONAL PREPARATION

New Mexico Tech	Socorro, NM	Astrophysics	Ph.D.	2012
New Mexico Tech	Socorro, NM	Physics	M.S.	2009
Bethel College	North Newton, KS	Physics, Chemistry	B.S.	2003

APPOINTMENTS

2020-Present	Associate Research Scientist, Texas A&M University
2015-2020	Assistant Research Scientist, Texas A&M University
2013-2015	Instrumentation Scientist, Magdalena Ridge Observatory
2012-2013	Postdoctoral Researcher, NESSI spectrograph, New Mexico Tech
2010-2012	NESSI spectrograph Research Assistant, New Mexico Tech
2006-2010	Physics Teaching Assistant, New Mexico Tech

PROPOSALS & AWARDS

2022 *Mt. Cuba Astronomical Foundation, \$168,325 for “Next Generation Cameras for the Exoplanet Transmission Spectroscopy Imager”.*

2021 *Texas A&M College of Science SUROP (Science Undergraduate Research Opportunities Program) \$1000 to fund a semester of undergraduate research. The student is investigating methods of determining M-Dwarf metallicities.*

2020-2023 Co-PI *Enabling precision calibration of massively multiplexed spectroscopic surveys* NSF Grant 2009430, \$654,246

2020 Co-PI *Damper Development, Actuator Testing, Air Cylinder Design Iteration* GMTO Corporation

2019-2022 Co-PI *MRI: Development of an Instrument to Measure the Atmospheres of Exoplanets* NSF Grant 1920312, \$526,289

2019-2020 Co-PI *The CGWA in the Era of Multimessenger Astronomy* NSF Grant 1242090, sponsored by the University of Texas Rio Grande Valley (TOROS)

2019 Co-I *Damper Development, Actuator Testing, Air Cylinder Design Iteration* GMTO Corporation

2019 Co-I *Task Order for Actuator Testing and Development* GMTO Corporation

2017-2022 Co-PI *Calibrating Astronomical Instruments to Improve the Science Gained from the Large Synoptic Survey Telescope* NSF Grant 1715865, \$372,475

2016-2019 Co-I *GMACS Conceptual Design Proposal* GMTO Corporation

2015 *Developed cost and schedule estimates for a five-year, \$25 million cooperative agreement with the Air Force Research Laboratory supporting development of the Magdalena Ridge Observatory Optical Interferometer project*

2012 *Marvin Wilkening Award for Excellence in Experimental Physics - New Mexico Tech*

2007-08 *New Mexico Space Grant Consortium Graduate Research Fellowship*

COLLABORATIONS

2022-present *Open Source Instrumentation* - Spectrograph development for prototype fiber positioners.

2021-present *Fermilab* - Next generation fiber positioners for multi-object spectroscopic surveys.

2020-2022 *Maunakea Spectroscopic Explorer* - Conceptual design study for SCal, the MSE calibration system.

First Author

- [1] Luke M. Schmidt et al. “Reflectivity characterization of various black and white materials”. In: *Advances in Optical and Mechanical Technologies for Telescopes and Instrumentation V*. Ed. by Ramón Navarro and Roland Geyl. Vol. 12188. International Society for Optics and Photonics. SPIE, 2022, 121884W. DOI: 10.1117/12.2630244. URL: <https://doi.org/10.1117/12.2630244>.
- [2] Luke M. Schmidt et al. “The conceptual design of SCal: a facility calibration system for the Maunakea Spectroscopic Explorer”. In: *Observatory Operations: Strategies, Processes, and Systems IX*. Ed. by David S. Adler, Robert L. Seaman, and Chris R. Benn. Vol. 12186. International Society for Optics and Photonics. SPIE, 2022, 121861P. DOI: 10.1117/12.2630252. URL: <https://doi.org/10.1117/12.2630252>.
- [3] Luke M. Schmidt et al. “The Exoplanet Transmission Spectroscopy Imager (ETSI), a new instrument for rapid characterization of exoplanet atmospheres”. In: *Ground-based and Airborne Instrumentation for Astronomy IX*. Ed. by Christopher J. Evans, Julia J. Bryant, and Kentaro Motohara. Vol. 12184. International Society for Optics and Photonics. SPIE, 2022, p. 1218486. DOI: 10.1117/12.2630196. URL: <https://doi.org/10.1117/12.2630196>.
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- [5] Luke M. Schmidt et al. “Characterization of the reflectivity of various black materials II”. In: *Proc. SPIE*. Vol. 10706. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. July 2018, 107065E. DOI: 10.1117/12.2312359.
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- [8] Luke M. Schmidt, F. G. Santoro, and C. A. Jurgenson. “Progress to First Light for AMASING, an Aperture Masking Instrument”. In: *American Astronomical Society Meeting Abstracts #217*. Jan. 2011, p. 157.14.
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Co-Author

- [1] Alexis Hill et al. “MSE: Instrumentation for a massively multiplexed spectroscopic survey facility”. In: *Ground-based and Airborne Instrumentation for Astronomy IX*. Ed. by Christopher J. Evans, Julia J. Bryant, and Kentaro Motohara. Vol. 12184. International Society for Optics and Photonics. SPIE, 2022, 121841B. DOI: 10.1117/12.2630529. URL: <https://doi.org/10.1117/12.2630529>.

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- [4] P. S. Ferguson et al. “Further development and testing of TCal: a mobile spectrophotometric calibration unit for astronomical imaging systems”. In: *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*. Vol. 11447. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. Dec. 2020, 114475U. DOI: 10.1117/12.2562736.
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- [6] Tae-Geun Ji et al. “Camera articulation prototype of the Giant Magellan Telescope Multi-object Astronomical and Cosmological Spectrograph (GMACS)”. In: *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*. Vol. 11452. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. Dec. 2020, p. 1145224. DOI: 10.1117/12.2561237.
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- [13] M. J. Creech-Eakman et al. “The Magdalena Ridge Observatory interferometer: first light and deployment of the first telescope on the array”. In: *Optical and Infrared Interferometry and Imaging VI*. Ed. by Michelle J. Creech-Eakman, Peter G. Tuthill, and Antoine Mérand. Vol. 10701. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. July 2018, p. 1070106. DOI: 10.1117/12.2314155.
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- [35] C. Jurgenson et al. “NESSI: the New Mexico Tech Extrasolar Spectroscopic Survey Instrument”. In: *Ground-based and Airborne Instrumentation for Astronomy III*. Ed. by Ian S. McLean, Suzanne K. Ramsay, and Hideki Takami. Vol. 7735. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. July 2010, p. 773519. DOI: 10.1117/12.856514.

TEACHING EXPERIENCE

2015-Present	Texas A&M	Order of Magnitude, Basic Astronomy	Substitute/Guest Lecturer
2012	Bethel College	The Universe & Its Structure	Adjunct Instructor
2010	New Mexico Tech	Physics I	Instructor
2006-2010	New Mexico Tech	Physics I Lab	Instructor

ASTRONOMICAL INSTRUMENTATION

SCal: Work package manager for the conceptual design of SCal, the Maunakea Spectroscopic Explorer facility calibration system. *2021-Present*.

FOCUS: Fiber Optic Characterization for Unprecedented Sky Subtraction (measurement of FRD, throughput, etc.,) optical, optomechanical design, control and automation software *2020-Present*.

ETSI: Multi-band imaging instrument for exoplanet atmosphere characterization. Optical and opto-

mechanical design, detector systems, *2019-Present*.

TOROS: 0.6 m Transient follow up telescope, development of wide field corrector optics and interface with detector system, *2019-Present*.

GMACS: Instrument scientist for GMACS, the first light Wide-Field, Multi-Object, Moderate-Resolution Optical Spectrometer for the Giant Magellan Telescope, *2015-2021*.

GMTO: Work manager for build and test of air cylinders and actuators for the GMT Primary Mirror Test Cell, *2019-2021*.

Black & White Materials: Characterization of the reflectivity of various black and white materials used for controlling stray light or as calibration screens. Work done in collaboration with 6+ undergraduate students, *2015-Present*.

TCAL: Traveling spectrophotometric telescope calibration system. System design and characterization, *2017-2022*.

NESSI: Near IR grism spectrograph for characterization of exoplanet atmospheres. Instrument assembly, integration, characterization, and commissioning. Optical alignment, cryogenic systems, detector tuning, software development, *2010-2013*.

ICONN: Magdalena Ridge Observatory Optical Interferometer fringe tracker. Pre-commissioning assembly, integration and test. IR detector, control systems and software, *2013-2015*.

BEASST: Magdalena Ridge Observatory Optical Interferometer automated alignment system. Algorithm development and on-site testing, *2013-2015*.

AMASING: Dissertation instrument, optical aperture masking and speckle imaging. Optical and opto-mechanical design, control electronics & software, detector system characterization and control, telescope interface. *2007-2012*.

OTHER ACTIVITIES

Education & Outreach

2022-Present	<i>Co-Founder of AggieSTAAR, the Aggie Scholarships for Technology Advancements in Astronomical Research</i> which provides summer research experiences for undergraduates and targets undergraduates from Texas, especially those from historically underrepresented populations in STEM careers.
Aug 21, 2017	Design and construction of a solar projector for a partial Solar Eclipse viewing event on the Texas A&M campus. Shared a view of the eclipse with ~2000 attendees.
2015-Present	<i>Annual Texas A&M Physics Festival science demo interpreter and developer.</i> Explaining astronomy related demonstrations to attendees, or improving existing demonstration designs.
2010-Present	<i>Mentor 2-8 undergraduate research students per semester</i> - Students work with me on currently funded projects to design mechanisms and optical mounts, write data reduction software, assemble instruments and build interactive web utilities (exposure time calculators, etc.)
2015-2019	<i>REU mentor summer research students (8+ students)</i> - Developing projects for students, working with the students on a daily basis, resulting in multiple student instruments deployed to the McDonald Observatory 0.9 m telescope.
2008-2015	<i>Board member of the Enchanted Skies Star Party, Socorro, NM,</i> Web developer, publicity and online advertising, event schedules, observatory tours, catering coordination.

Service

2015-Present	<i>Annual Texas A&M Astrosymposium organizer, the Astrosymposium features ~40 talks from undergraduate and graduate students, research staff, and faculty in the Department of Physics & Astronomy.</i>
2010-2012	<i>Secretary of New Mexico Tech ΣΠΣ Chapter</i>

Review Panels in last 3 years:

1x NSF
3x NASA

Memberships

2021-Present	<i>SPIE Lifetime Member</i>
2010-2021	<i>SPIE Member</i>
2009-2015	<i>American Astronomical Society Member</i>
2007-Present	<i>ΣΠΣ Lifetime Member</i>

REFERENCES

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