

ROBERT ANDREW SIMCOE

Curriculum Vitae

Department of Physics, Astrophysics Division
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DEGREES

Ph.D. in Astronomy, California Institute of Technology, 2003
Thesis: *Observations of Intergalactic Heavy Element Enrichment in the Early Universe*
Advisor: Prof. Wallace L.W. Sargent

A.B. in Astrophysical Sciences, *Magna Cum Laude*, Princeton University, 1997
Senior Thesis: *A Spectroscopic Method for Distinguishing Gravitational Lenses from Binary Quasars*
Advisor: Prof. Edwin L. Turner

EMPLOYMENT

Director, MIT Kavli Institute for Astrophysics and Space Research	2019 - present
Francis L. Friedman Professor of Physics, MIT	2014 - present
Associate Professor of Physics, MIT	2011 - 2014
Assistant Professor of Physics, MIT	2006 - 2011
Pappalardo Postdoctoral Fellow in Physics, MIT, Supervisor: Paul Schechter	2003 - 2006

HONORS

Fellow, Radcliffe Institute for Advanced Studies at Harvard University	Spring 2016
Kingsley Distinguished Visiting Professorship, Caltech	Spring 2015
Alfred P. Sloan Foundation Research Fellow	2009 - 2012
Lewis A. Kingsley Fellowship, Caltech	2001
Sigma Xi Book Award for Excellence in Senior Thesis Research, Princeton	1997

UNDERGRADUATE RESEARCH STUDENTS SUPERVISED

Abigail Schipper (2021)	MIT '23
Cruz Soto (2021)	MIT '23
Joshua Glass (2021)	MIT '22
Panhasopheak Pang (2020)	MIT '22
Alexandra Weinsten (2020)	UPenn '23
Sabrina Khan (2018)	Planetary Geology Intern, JPL
Stephen Chen (2017)	PhD student (Physics), UC Berkeley
Ana Glidden (2015)	PhD student (EAPS), MIT
Eduardo Seyffert (2012)	Strategy & Marketing, Blue Origin Spaceflight
Dr. Melodie Kao (2011)	51 Pegasi Postdoctoral Fellow, UCSC
Dr. Daniella Bardalez-Gagliuffi (2011)	Postdoc Fellow, American Museum of Natural History

Dr. Elizabeth Lovegrove (2010)	Postdoctoral Researcher, Los Alamos National Labs
Dr. Danielle Piskorz (2008)	Caltech Planetary Sciences Ph.D., now at JPL
Rhys Hiltner (2007)	Senior Programmer, Twitch
Dr. James Torres (2007)	Technical Staff, Lincoln Laboratories
Prof. Caroline Morley (2007)	Assistant Professor, UT Austin

GRADUATE STUDENTS SUPERVISED

Michael Matejek, (July 2012): *An Infrared Survey for MgII Absorption at $z > 2$* (Now at Goldman Sachs)

Peter Sullivan, 2011 - 2014: *Alternative detector technologies for observing the infrared sky* (Now at JPL)

Thomas Cooper, 2012-2017: *Heavy Element Enrichment in the Early Universe* (Now at Carnegie Observatories)

Danielle Frostig, 2018-present: *A Wide-Field Infrared Survey Telescope for Time-Domain Astronomy*

David DePalma (2019-present) *CUBS: the Cosmic Ultraviolet Baryon Survey (PI Hsiao-Wen Chen)*

POSTDOCTORAL RESEARCHERS MENTORED

Kathy Cooksey (NSF AAPF Fellow)	Tenured Professor, University of Hawaii
John Bochanski	Tenured Professor, Rider University
Laura Lopez (Pappalardo Fellow)	Tenured Professor, Ohio State University
Paul Torrey (Hubble Fellow)	Assistant Professor, University of Florida
Rongmon Bordoloi (Hubble Fellow)	Assistant Professor, North Carolina State University
Monica Turner	Senior Data Scientist, UN Ctr. for Humanitarian Data
Samuel Halverson (Sagan Fellow)	Astrophysicist / Optical Engineer, NASA / JPL
Anna-Christina Eilers	Current Hubble Fellow
Kishalay De	2021 Einstein Fellow
Kevin Burdge	2021 Pappalardo Fellow

RESEARCH STAFF MENTORED

Dr. Gabor Furesz, Instrumentation Scientist (Research Scientist, 2014-2018; PRS 2018-present)

Dr. Nathan Lourie, Instrumentation Scientist (Research Scientist, 2019-present)

TEACHING EXPERIENCE

8.902 (Astrophysics II: Graduate Extragalactic Astronomy and Cosmology), Fall 2006-8, 2010-15

8.02 (Electricity and Magnetism; Technology Enhanced Active Learning format), Spring 2007,08,18

8.972 (Graduate Seminar in Astronomical Instrumentation), Spring 2010, 2013

8.03 (Physics of Waves and Vibrations), Spring 2011, 2013, 2014

8.012 (Advanced Mechanics), Fall 2017, 2018

FACILITY-CLASS ASTRONOMICAL INSTRUMENTS (As PI or Project Scientist)

- **LLAMAS** - Optical Integral Field Unit Spectrometer, 6.5-meter Magellan Telescopes (2022)
- **WINTER** - IR time-domain survey on 1-m robotic telescope + 1.2 x 1.2 degree InGaAs mosaic
- **FIRE** - IR (0.8-2.5 micron) Echellette for the Magellan Telescopes, commissioned 2010
- **LFC** - Mosaic Prime-focus CCD camera for the Palomar 200" Hale Telescope, commissioned 1998

EXTERNAL SERVICE

- Program Scientist, WISDOM exoplanet doppler spectrometer (Phase A study / WIYN NASA EPRV)
- Member, Magellan Observatory Management Council (2018-present)
- Chair, Magellan Observatory Science Advisory Council (2014 - 2019)
- Member, Giant Magellan Telescope Science Advisory Council (2015 - present)
- Project Scientist Team, Giant Magellan Telescope (2014 - 2016)
- Carnegie Observatories Director Search Committee (2015)
- MIT Member Representative to Associated Universities for Research in Astronomy (2008-2012)
- Panelist, NSF Advanced Technologies and Instrumentation (ATI) grant program
- Panelist, NSF Astronomy & Astrophysics Postdoctoral Fellowship Program
- Panelist, NSF Astronomy & Astrophysics Research Grant Program
- Pre-Ship Review Panel, Magellan's MMIRS IR Spectrometer
- Pre-Ship Review Chair, Magellan's FourStar Infrared Imager
- CoDR Reviewer, Keck / Liger instrument
- CoDR Reviewer, Keck FOBOS instrument
- Chair, Optical Design Review for TESS Exoplanet Survey Satellite
- Pre-Ship Review Panel member for the Magellan Adaptive Optics system
- NASA/Keck Telescope Time Allocation Committee
- Referee: Nature, Science, Astrophysical Journal, Astronomical Journal, MNRAS

SELECTED PUBLICATIONS (Total 72 Refereed Papers, 6319 citations, h-index 40)

1. **Simcoe, Robert A.**, Furesz, Gabor, Sullivan, Peter W., Hellickson, T., Malonis, A., Kasliwal, M., Shectman, S., Kollmeier, J., and Moore, A (2019) "Background-limited Imaging in the Near Infrared with Warm InGaAs Sensors: Applications for Time-domain Astronomy" *The Astronomical Journal*, 157, 46
2. Banados, E., Venemans, Farina, Mazzucchelli, Walter, Fang, DeCarli, Stern, Fan, Davies, Hennawi, **Simcoe, R.A.**, Turner, Rix, Yang, Kelson, Rudie, Winters (2018) "An 800-million-solar-mass black hole in a significantly neutral Universe at a redshift of 7.5," *Nature*, 553, 473
3. Mainali, R., Kollmeier, J. A., Stark, D., **Simcoe, R. A.**, Walth, G., Newman, A., Miller, D. (2017) "Evidence for a Hard Ionizing Spectrum from a $z = 6.11$ Stellar Population," *The Astrophysical Journal Letters*, 836, L14
4. **Simcoe, Robert A.**, Sullivan, Peter W., Cooksey, Kathy L., Kao, Melodie M., Matejek, Michael S., and Burgasser, Adam J. (2012) "Extremely Metal-Poor Gas at a Redshift of $z = 7$," *Nature*, 492, 79
5. Sullivan, P. W. and **Simcoe, R. A.**, (2012) "A Calibrated Measurement of the Near-IR Continuum Sky Brightness Using Magellan/FIRE", *PASP*, 124, 1336
6. Matejek, M. and **Simcoe, R.A.**, (2012) "A Survey for MgII absorption at $2 < z < 6$ with Magellan / FIRE. I: Sample and Evolution of the MgII Frequency," *The Astrophysical Journal*, 761, 112

7. Cushing, Michael C., Kirkpatrick, J. Davy, Gelino, Christopher R., Griffith, Roger L., Skrutskie, Michael F., Mainzer, A., Marsh, Kenneth A., Beichman, Charles A., Burgasser, Adam J., Prato, Lisa A., **Simcoe, Robert A.**, Marley, Mark S., Saumon, D., Freedman, Richard S., Eisenhardt, Peter R., Wright, Edward L. (2011), “The Discovery of Y Dwarfs using Data from the Wide-field Infrared Survey Explorer (WISE)”, *The Astrophysical Journal*, 743, 50
8. **Simcoe, Robert A.**, Cooksey, Kathy L., Matejek, Michael, Burgasser, Adam J., Bochanski, John J., Lovegrove, Elizabeth, Bernstein, Rebecca A., Pipher, Judith L., Forrest, William, McMurtry, Craig, Fan, Xiaohui, and O’Meara, John M. (2011) “Constraints on the Universal C IV Mass Density at $z \sim 6$ from Early Spectra Obtained with the Magellan FIRE Spectrograph,” *The Astrophysical Journal*, 743, 21
9. **Simcoe, Robert A.** (2011) “The Carbon Content of Intergalactic Gas at $z \sim 4.3$ and its Evolution Toward $z \sim 2.4$ ”, *The Astrophysical Journal*, 738, 159
10. **Simcoe, Robert A.**, Sargent, Wallace L. W., Rauch, Michael, Becker, George (2006), “Observations of Chemically Enriched QSO Absorbers near $z \sim 2.3$ Galaxies: Galaxy Formation Feedback Signatures in the Intergalactic Medium,” *The Astrophysical Journal*, 637, 648
11. **Simcoe, Robert A.**, Sargent, Wallace L. W., Rauch, Michael (2004) “The Distribution of Metallicity in the Intergalactic Medium at $z \sim 2.5$: O VI and C IV Absorption in the Spectra of Seven QSOs,” *The Astrophysical Journal*, 606, 92
12. **Simcoe, Robert A.**, Sargent, Wallace L. W., Rauch, Michael (2002), “Characterizing the Warm-Hot Intergalactic Medium at High Redshift: A High-Resolution Survey for O VI at $z = 2.5$,” *The Astrophysical Journal*, 578, 737
13. **Simcoe, R. A.**, Metzger, M. R., Small, T. A., Araya, G. (2000), “LFC - A New Wide-Field Imager at Palomar,” *Bulletin of the American Astronomical Society*, 196, 5209

SELECTED SPONSORED RESEARCH CONTRACTS AND GRANTS

NSF Mid-Scale Innovation Program: “The Large Lenslet Array Magellan Spectrograph (LLAMAS): A Facility Integral Field Spectrograph for the Magellan Telescopes,” 2018-present.

NSF Major Research Instrumentation Program: “Development of a Wide-Field Infrared Camera for Robotic Surveys of the Dynamic Astronomical Sky,” 2018-present

NSF Major Research Instrumentation: “FIRE: Development of an Innovative Infrared Echelle Spectrometer for the Magellan Telescopes,” 2006 - 2010

NSF Astronomy and Astrophysics Research Grant: “Chemical Abundances in the Intergalactic Medium: Evolution and Constraints on Feedback from Galaxy Formation.” 2008 - 2011

NSF Astronomy and Astrophysics Research Grant: “Feedback from the First Stars: Chemical Abundances in the First Billion Years after the Big Bang” 2011-2013

NASA Hubble Space Telescope General Investigator Grant: “The Structure of Mg II Absorbing Galaxies at $z=2 - 5$ ” 2013 - 2015

NASA NN-EXPLORE Instrument Concept Study Grant: “WISDOM: A Precision Radial Velocity Spectrometer for the WIYN Telescope” September 2015-2017