Carl Andrew Ziegler

Assistant Professor/Observatory Director

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Research Interests

Characterization of exoplanets; formation and evolution of planetary systems in multiple star systems; large adaptive optics surveys; detection of long-period transiting planets

Positions

September 2020 - current
Stephen F. Austin State University, Nacogdoches, TX
Assistant Professor of Astronomy
Director of SFA Observatory

August 2018 - July 2020
University of Toronto, Toronto, ON
Dunlap Postdoctoral Fellow
PI: SOAR TESS survey (speckle imaging survey)
PI: One Hit Wonders (TESS single-transit planet survey)

Education

May 2018
University of North Carolina, Chapel Hill, NC
PhD, Physics and Astronomy
Thesis: "Characterization of Exoplanets and Stellar Systems with New Robots"
Advisor: Prof. Nicholas Law

August 2013
Southern Illinois University, Carbondale, IL
M.S., Physics
Thesis: "Adsorption of Neon on Open Carbon Nanohorn Aggregates"
Advisor: Prof. Aldo Migone

May 2009
William Jewell College, Liberty, MO
B.A., Physics and Mathematics
Research: variable stars, globular clusters
Advisor: Prof. Maggie Sherer

First or Second Author Publications

10. *An Adaptive Optics Census of Companions to Northern Stars Within 25 pc with Robo-AO*
M. Salama, C. Ziegler, et al., The Astronomical Journal, 2022 **163** 5

9. *Robo-AO and SOAR High-resolution Surveys of Exoplanet Hosting Stars*
C. Ziegler, et al., Frontiers in Astronomy and Space Sciences, 2021 **8** 3

8. *SOAR TESS Survey. II: The impact of stellar companions on planetary populations*
C. Ziegler, et al., The Astronomical Journal, 2021 **162** 5

7. *SOAR TESS Survey. I: Sculpting of TESS planetary systems by stellar companions*
C. Ziegler, et al., The Astronomical Journal, 2020 **159** 19

First or Second Author Publications – Continued

6. *Measuring the Recoverability of Close Binaries in Gaia DR2 with the Robo-AO Kepler Survey*
   C. Ziegler, et al., The Astronomical Journal, 2018 **156** 259
5. *Robo-AO Kepler Planetary Candidate Survey V: The effect of physically associated stellar companions on planetary systems*
   C. Ziegler, et al., The Astronomical Journal, 2018 **156** 83
4. *Robo-AO Kepler Planetary Candidate Survey IV: The effect of nearby stars on 3857 planetary candidate systems*
   C. Ziegler, et al., The Astronomical Journal, 2018 **155** 161
3. *Robo-AO Kepler Planetary Candidate Survey III: Adaptive Optics Imaging of 1629 Kepler Exoplanet Candidate Host Stars*
   C. Ziegler, et al., The Astronomical Journal, 2017 **153** 66
2. *Robo-AO Kepler Planetary Candidate Survey II: Adaptive Optics Imaging of 969 Kepler Exoplanet Candidate Host Stars*
   C. Baranec, C. Ziegler, et al., The Astronomical Journal, 2016 **152** 18
1. *Multiplicity of the Galactic Senior Citizens: A High-resolution Search for Cool Subdwarf Companions*
   C. Ziegler, et al., The Astrophysical Journal, 2015 **804** 30

SPIE Instrumentation Papers

3. *SRAO: the southern robotic speckle + adaptive optics system*
   N. Law, C. Ziegler, A. Tokovinin, Proc. SPIE 9907, Optical and Infrared Interferometry and Imaging V, 99070K, 2016
2. *SRAO: optical design and the dual-knife-edge WFS*
   C. Ziegler, et al., Proc. SPIE 9909, Adaptive Optics Systems V, 99093Z, 2016
1. *The Robo-AO KOI survey: laser adaptive optics imaging of every Kepler exoplanet candidate*
   C. Ziegler, et al., Proc. SPIE 9909, Adaptive Optics Systems V, 99095U, 2016

Talks

Conference Talks

- *SOAR TESS Speckle Survey of Exoplanet Candidates*
  C. Ziegler, et al., Texas A&M University-Commerce, March 23-25, 2023
- *SOAR TESS survey: The sculpting of planetary systems by stellar companions*
  AAS 235, January 5-9, Honolulu, HI (2020)
- *One Hit Wonders: Hunting the longest-period TESS planets*
  TESS Sci Con I, July 29-Aug 2, Cambridge, MA (2019)
- *One Hit Wonders: Hunting the longest-period TESS planets*
  CASCA 2019, June 17-20, Montreal, QC (2019)
- *Death Stars? Understanding how tight binaries impact TESS planets with SOAR speckle imaging*
  AAS 233, January 6-10, Seattle, WA (2019)
- *Robo-AO KOI Survey: LGS-AO imaging of every Kepler planetary candidate host star*
  AAS 231, January 9-12, National Harbor, MD (2018)
- *High resolution imaging of 4000 Kepler planetary candidate host stars*
  Know Thy Star, Know Thy Planet, October 11, Pasadena, CA (2017)

Talks - Continued

- *Robo-AO KOI Survey: LGS-AO imaging of every Kepler planetary candidate host star*
  Transiting Exoplanets, July 17, Keele, UK (2017)
- *Adaptive Optics Imaging of Kepler Planetary Candidates*
  North Carolina Astronomers Meeting, September 24, Jamestown, NC (2016)
- *The Robo-AO KOI Survey: Laser Adaptive Optics Imaging of Every Kepler Exoplanet Candidate*
  AAS 227, January 4-8, Kissimmee, FL (2016)
- *Study of Carbon Dioxide adsorption on Purified HiPco Nanotubes*
  American Physical Society Meeting, March 18–22, Baltimore, MD (2013)

Invited Talks

- *The Robo-AO KOI survey and the development of a Southern robotic AO system*
  Institute for Astronomy, September 14, Hilo, Hawaii (2016)

Conference Posters

- *One Hit Wonders: recovering the longest period TESS planets*
  C. Ziegler, et al., Extreme Solar Systems IV, Reykyavik, Iceland (2019)
- *Sculpting of TESS Planetary Systems by Binary Stars*
  C. Ziegler, et al., Tess SciCon I, Cambridge, MA (2019)
- *Robo-AO KOI Survey: Robotic LGS-AO Imaging of Every Kepler Planetary Candidate*
  C. Ziegler, et al., Kepler SciCon IV, NASA Ames (2017)
- *SRAO: the first southern robotic AO system*
  C. Ziegler, et al., SPIE Astronomical Telescopes + Instrumentation, Edinburgh, UK (2016)
- *The Robo-AO KOI survey: laser adaptive optics imaging of every Kepler exoplanet candidate*
  C. Ziegler, et al., SPIE Astronomical Telescopes + Instrumentation, Edinburgh, UK (2016)
- *Multiplicity of the Galactic Senior Citizens: A high-resolution search for cool subdwarf companions*
  C. Ziegler & N. Law, AAS 225, Seattle, WA (2015)

Grants and Telescope Time

- *Robo-AO-2 Observations of TESS Planet Candidates*
  C. Ziegler & C. Baranec, TESS Guest Investigator, $250,000, *In submission*
- *SOAR TESS Survey of Exoplanet Candidate Hosts*
  C. Ziegler et al., NOAO Proposal, Award 3 Nights on SOAR telescope, 2022A
- *Characterization of TESS planets in multiple star systems*
  C. Ziegler et al., NOAO Proposal, Award 4 Nights on SOAR telescope, 2021A
- *SOAR TESS Survey: Characterization of TESS planets in multiple star systems*
  C. Ziegler et al., NOAO Proposal, Award 3 Nights on SOAR telescope, 2020B

Previous Teaching Experience

Fall 2019	**University of Toronto**, Toronto, ON *Exoplanet mini-course, AST 221* Taught 8-week course on detection of exoplanets and exoplanet demographics to Astronomy majors. Mix of lectures an in-class group projects.
Summer 2019	**University of Toronto**, Toronto, ON *AO Lab Lead, Dunlap Summer School* Led both undergraduates and graduate students in a lecture introducing adaptive optics and a lab to build a Shack-Hartmann wavefront sensor.
Summer 2019	**University of Toronto**, Toronto, ON *Summer Undergraduate Mentor* Advised summer undergraduate student in testing and implementing robotic telescope control and on-the-fly data reduction pipeline.
Spring 2017	**University of North Carolina**, Chapel Hill, NC *Undergraduate Research Mentor* Advised capstone course for UNC undergraduate to build novel methods to reduce adaptive optics images of bright stars
Summer 2015	**University of North Carolina**, Chapel Hill, NC *Summer Research Mentor* Advised high school student with *Kepler* host star multiplicity research
Fall 2013- Spring 2014	**University of North Carolina**, Chapel Hill, NC *Astronomy 101L Lab Teaching Assistant* Led five lab sections using robotic "Skynet" telescopes
Fall 2010- Spring 2013	**Southern Illinois University**, Carbondale, IL *Astronomy 101 Lab Teaching Assistant* Taught twenty lab sections in astronomy
Spring 2012- Fall 2012	**Southern Illinois University**, Carbondale, IL *Physics Lab Instructor* Taught three calculus-based physics lab courses

Professional Service and Public Outreach

- Referee for MNRAS, ApJ, AJ, PASP, and A&A
- Assisted monthly public observing nights for Chapel Hill Astronomical and Observational Society
- Two public talks for Raleigh Astronomy Club

Sofware Skills

Computer Programming:	- Python (primary language for astronomical data analysis) - C++ (control software for Andor EMCCD camera, WFS reconstruction) - TheSkyX (automated telescope and observatory control) - MaximDL (camera control and reduction) - Mathematica (hydrodymical simulations for graduate ISM class) - HTML (designed project sites, `roboaokepler.org` and `onehitwonders.space`) - LabVIEW (wrote control GUI for gas adsorption instrumentation) - Mathematica (hydrodymical simulations for graduate ISM class)

Instrumentation

Instrumentation Design:	- Zemax (optical design for Robo-SOAR) - SolidWorks (modeling for fabrication of custom mounts and packaging used in Robo-SOAR)
Robo-SOAR construction:	- built optical testbed of NGS-AO system - designed and constructed prototype of reflective pyramid WFS

Professional References

Professor Suresh Sivanandam
Assistant Professor, Dunlap Institute for Astronomy, University of Toronto
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Professor Nicholas Law
Assistant Professor, Department of Astronomy, University of North Carolina
nlaw@unc.edu / 919-962-3019

Professor Christoph Baranec
Assistant Astronomer, Institute for Astronomy, University of Hawaii, Manoa
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Professor Adam Kraus
Assistant Professor, Department of Astronomy, University of Texas, Austin
alk@astro.as.utexas.edu / 617-956-7740

All Peer-reviewed Articles

[116] Rafael Brahm et al. *Three Long-period Transiting Giant Planets from TESS*. In: The Astronomical Journal **165**.6, 227 (2023), p. 227. arXiv: 2304.02139 [astro-ph.EP].

[115] D. del Ser et al. *TFAW survey II: six newly validated planets and 13 planet candidates from K2*. In: Monthly Newsletter of the Royal Astronomical Society **518**.1 (2023), pp. 669–690. arXiv: 2210.10805 [astro-ph.EP].

[114] Mohammed El Mufti et al. *TOI 560: Two Transiting Planets Orbiting a K Dwarf Validated with iSHELL, PFS, and HIRES RVs*. In: The Astronomical Journal **165**.1, 10 (2023), p. 10.

[113] Ginger Frame et al. *TOI-2498 b: a hot bloated super-Neptune within the Neptune desert*. In: Monthly Newsletter of the Royal Astronomical Society **523**.1 (2023), pp. 1163–1174. arXiv: 2305.06950 [astro-ph.EP].

[112] Faith Hawthorn et al. *TOI-908: a planet at the edge of the Neptune desert transiting a G-type star*. In: Monthly Newsletter of the Royal Astronomical Society **524**.3 (2023), pp. 3877–3893. arXiv: 2306.09758 [astro-ph.EP].

[111] Xinyan Hua et al. *A Transiting Super-Earth in the Radius Valley and an Outer Planet Candidate Around HD 307842*. In: The Astronomical Journal **166**.1, 32 (2023), p. 32. arXiv: 2306.14655 [astro-ph.EP].

[110] Zitao Lin et al. *Three low-mass companions around aged stars discovered by TESS*. In: Monthly Newsletter of the Royal Astronomical Society **523**.4 (2023), pp. 6162–6185. arXiv: 2210.13939 [astro-ph.SR].

[109] Christian Magliano et al. *A systematic validation of hot Neptunes in TESS data*. In: Monthly Newsletter of the Royal Astronomical Society **519**.1 (2023), pp. 1562–1577. arXiv: 2211.08490 [astro-ph.EP].

[108] Christopher Mann et al. *Validation of TOI-1221 b: A Warm Sub-Neptune Exhibiting Transit Timing Variations around a Sun-like Star*. In: The Astronomical Journal **165**.5, 217 (2023), p. 217. arXiv: 2209.13651 [astro-ph.EP].

[107] Priyashkumar Mistry et al. *VaTEST. II. Statistical Validation of 11 TESS-detected Exoplanets Orbiting K-type Stars*. In: The Astronomical Journal **166**.1, 9 (2023), p. 9. arXiv: 2301.09865 [astro-ph.EP].

[106] Dominic Oddo et al. *Characterization of a Set of Small Planets with TESS and CHEOPS and an Analysis of Photometric Performance*. In: The Astronomical Journal **165**.3, 134 (2023), p. 134. arXiv: 2301.08162 [astro-ph.EP].

[105] H. P. Osborn et al. *Two warm Neptunes transiting HIP 9618 revealed by TESS and Cheops*. In: Monthly Newsletter of the Royal Astronomical Society **523**.2 (2023), pp. 3069–3089. arXiv: 2306.04450 [astro-ph.EP].

[104] Angelica Psaridi et al. *Three Saturn-mass planets transiting F-type stars revealed with TESS and HARPS. TOI-615b, TOI-622b, and TOI-2641b*. In: **675**, A39 (2023), A39. arXiv: 2303.15080 [astro-ph.EP].

[103] Joseph E. Rodriguez et al. *Another shipment of six short-period giant planets from TESS*. In: Monthly Newsletter of the Royal Astronomical Society **521**.2 (2023), pp. 2765–2785. arXiv: 2205.05709 [astro-ph.EP].

[102] Lizhou Sha et al. *TESS spots a mini- interior to a hot saturn in the TOI-2000 system*. In: Monthly Newsletter of the Royal Astronomical Society **524**.1 (2023), pp. 1113–1138. arXiv: 2209.14396 [astro-ph.EP].

[101] Evan Tey et al. *TESS Discovery of Twin Planets near 2:1 Resonance around Early M Dwarf TOI 4342*. In: The Astronomical Journal **165**.3, 93 (2023), p. 93. arXiv: 2301.01370 [astro-ph.EP].

[100] Benjamin M. Tofflemire et al. *A Low-mass, Pre-main-sequence Eclipsing Binary in the 40 Myr Columba Association-Fundamental Stellar Parameters and Modeling the Effect of Star Spots*. In: The Astronomical Journal **165**.2, 46 (2023), p. 46. arXiv: 2210.10789 [astro-ph.SR].
[99] A. Tuson et al. *TESS and CHEOPS discover two warm sub-Neptunes transiting the bright K-dwarf HD 15906*. In: Monthly Newsletter of the Royal Astronomical Society **523**.2 (2023), pp. 3090–3118. arXiv: 2306.04511 [astro-ph.EP].
[98] Noah Vowell et al. *HIP 33609 b: An Eccentric Brown Dwarf Transiting a V = 7.3 Rapidly Rotating B Star*. In: The Astronomical Journal **165**.6, 268 (2023), p. 268. arXiv: 2301.09663 [astro-ph.EP].
[97] Mackenna L. Wood et al. *TESS Hunt for Young and Maturing Exoplanets (THYME). IX. A 27 Myr Extended Population of Lower Centaurus Crux with a Transiting Two-planet System*. In: The Astronomical Journal **165**.3, 85 (2023), p. 85. arXiv: 2212.03266 [astro-ph.SR].
[96] Samuel W. Yee et al. *The TESS Grand Unified Hot Jupiter Survey. II. Twenty New Giant Planets*. In: The Astrophysical Journal Supplment **265**.1, 1 (2023), p. 1. arXiv: 2210.15473 [astro-ph.EP].
[95] J. M. Almenara et al. *GJ 3090 b: one of the most favourable mini-Neptune for atmospheric characterisation*. In: Astronomy & Astrophysics **665**, A91 (2022), A91. arXiv: 2207.14121 [astro-ph.EP].
[94] O. Barragán et al. *The young HD 73583 (TOI-560) planetary system: two 10-$M_\oplus$ mini-Neptunes transiting a 500-Myr-old, bright, and active K dwarf*. In: Monthly Newsletter of the Royal Astronomical Society **514**.2 (2022), pp. 1606–1627. arXiv: 2110.13069 [astro-ph.EP].
[93] Luca Cacciapuoti et al. *TESS discovery of a super-Earth and two sub-Neptunes orbiting the bright, nearby, Sun-like star HD 22946*. In: Astronomy & Astrophysics **668**, A85 (2022), A85. arXiv: 2209.09597 [astro-ph.EP].
[92] Sam Christian et al. *A Possible Alignment Between the Orbits of Planetary Systems and their Visual Binary Companions*. In: The Astronomical Journal **163**.5, 207 (2022), p. 207. arXiv: 2202.00042 [astro-ph.EP].
[91] Jessie L. Christiansen et al. *Scaling K2. V. Statistical Validation of 60 New Exoplanets From K2 Campaigns 2-18*. In: The Astronomical Journal **163**.6, 244 (2022), p. 244. arXiv: 2203.02087 [astro-ph.EP].
[90] Jiayin Dong et al. *NEID Rossiter-McLaughlin Measurement of TOI-1268b: A Young Warm Saturn Aligned with Its Cool Host Star*. In: The Astrophysical Journall **926**.2, L7 (2022), p. L7. arXiv: 2201.12836 [astro-ph.EP].
[89] Georgina Dransfield et al. *HD 28109 hosts a trio of transiting Neptunian planets including a near-resonant pair, confirmed by ASTEP from Antarctica*. In: Monthly Newsletter of the Royal Astronomical Society **515**.1 (2022), pp. 1328–1345. arXiv: 2205.09046 [astro-ph.EP].
[88] Steven Giacalone et al. *HD 56414 b: A Warm Neptune Transiting an A-type Star*. In: The Astrophysical Journall **935**.1, L10 (2022), p. L10. arXiv: 2208.06396 [astro-ph.EP].
[87] Steven Giacalone et al. *Validation of 13 Hot and Potentially Terrestrial TESS Planets*. In: The Astronomical Journal **163**.2, 99 (2022), p. 99. arXiv: 2201.12661 [astro-ph.EP].
[86] Alexis Heitzmann et al. *TOI-4562 b: A highly eccentric temperate Jupiter analog orbiting a young field star*. In: arXiv e-prints, arXiv:2208.10854 (2022), arXiv:2208.10854. arXiv: 2208.10854 [astro-ph.EP].
[85] Benjamin J. Hord et al. *The Discovery of a Planetary Companion Interior to Hot Jupiter WASP-132 b*. In: The Astronomical Journal **164**.1, 13 (2022), p. 13. arXiv: 2205.02501 [astro-ph.EP].
[84] F. Murgas et al. *HD 20329b: An ultra-short-period planet around a solar-type star found by TESS*. In: Astronomy & Astrophysics **668**, A158 (2022), A158. arXiv: 2211.02547 [astro-ph.EP].
[83] Carina M. Persson et al. *TOI-2196 b: Rare planet in the hot Neptune desert transiting a G-type star*. In: Astronomy & Astrophysics **666**, A184 (2022), A184. arXiv: 2208.05797 [astro-ph.EP].
[82] Maıssa Salama et al. *An Adaptive Optics Census of Companions to Northern Stars Within 25 pc with Robo-AO*. In: The Astronomical Journal **163**.5, 200 (2022), p. 200. arXiv: 2203.11250 [astro-ph.SR].
[81] Luisa Maria Serrano et al. *A low-eccentricity migration pathway for a 13-h-period Earth analogue in a four-planet system*. In: Nature Astronomy **6** (2022), pp. 736–750. arXiv: 2204.13573 [astro-ph.EP].
[80] Sydney Vach et al. *TOI-712: A System of Adolescent Mini-Neptunes Extending to the Habitable Zone*. In: The Astronomical Journal **164**.2, 71 (2022), p. 71. arXiv: 2111.02416 [astro-ph.EP].
[79] Samuel W. Yee et al. *The TESS Grand Unified Hot Jupiter Survey. I. Ten TESS Planets*. In: The Astronomical Journal **164**.2, 70 (2022), p. 70. arXiv: 2205.09728 [astro-ph.EP].
[78] Elisabeth R. Adams et al. *Ultra-short-period Planets in K2. III. Neighbors are Common with 13 New Multiplanet Systems and 10 Newly Validated Planets in Campaigns 0-8 and 10*. In: Planetary Society Journal **2**.4, 152 (2021), p. 152. arXiv: 2011.11698 [astro-ph.EP].
[77] Brett C. Addison et al. *TOI-257b (HD 19916b): a warm sub-saturn orbiting an evolved F-type star*. In: Monthly Newsletter of the Royal Astronomical Society **502**.3 (2021), pp. 3704–3722. arXiv: 2001.07345 [astro-ph.EP].
[76] Jennifer A. Burt et al. *TOI-1231 b: A Temperate, Neptune-sized Planet Transiting the Nearby M3 Dwarf NLTT 24399*. In: The Astronomical Journal **162**.3, 87 (2021), p. 87. arXiv: 2105.08077 [astro-ph.EP].
[75] Theron W. Carmichael et al. *TOI-811b and TOI-852b: New Transiting Brown Dwarfs with Similar Masses and Very Different Radii and Ages from the TESS Mission*. In: The Astronomical Journal **161**.2, 97 (2021), p. 97. arXiv: 2009.13515 [astro-ph.SR].
[74] M. Cointepas et al. *TOI-269 b: an eccentric sub-Neptune transiting a M2 dwarf revisited with ExTrA*. In: Astronomy & Astrophysics **650**, A145 (2021), A145. arXiv: 2104.14782 [astro-ph.EP].
[73] Rebekah I. Dawson et al. *Precise Transit and Radial-velocity Characterization of a Resonant Pair: The Warm Jupiter TOI-216c and Eccentric Warm Neptune TOI-216b*. In: The Astronomical Journal **161**.4, 161 (2021), p. 161. arXiv: 2102.06754 [astro-ph.EP].
[72] Tansu Daylan et al. *TESS Discovery of a Super-Earth and Three Sub-Neptunes Hosted by the Bright, Sun-like Star HD 108236*. In: The Astronomical Journal **161**.2, 85 (2021), p. 85. arXiv: 2004.11314 [astro-ph.EP].
[71] Mohammed El Mufti et al. *TOI 560 : Two Transiting Planets Orbiting a K Dwarf Validated with iSHELL, PFS and HIRES RVs*. In: arXiv e-prints, arXiv:2112.13448 (2021), arXiv:2112.13448. arXiv: 2112.13448 [astro-ph.EP].

[70] Tianjun Gan et al. *HD 183579b: a warm sub-Neptune transiting a solar twin detected by TESS*. In: Monthly Newsletter of the Royal Astronomical Society **507**.2 (2021), pp. 2220–2240. arXiv: 2107.14015 [astro-ph.EP].
[69] R. Luque et al. *A planetary system with two transiting mini-Neptunes near the radius valley transition around the bright M dwarf TOI-776*. In: Astronomy & Astrophysics **645**, A41 (2021), A41. arXiv: 2009.08338 [astro-ph.EP].
[68] David V. Martin et al. *TOI-1259Ab - a gas giant planet with 2.7 per cent deep transits and a bound white dwarf companion*. In: Monthly Newsletter of the Royal Astronomical Society **507**.3 (2021), pp. 4132–4148. arXiv: 2101.02707 [astro-ph.EP].
[67] Kristo Ment et al. *TOI 540 b: A Planet Smaller than Earth Orbiting a Nearby Rapidly Rotating Low-mass Star*. In: The Astronomical Journal **161**.1, 23 (2021), p. 23. arXiv: 2009.13623 [astro-ph.EP].
[66] C. Moutou et al. *TOI-1296b and TOI-1298b observed with TESS and SOPHIE: two hot Saturn-mass exoplanets with different densities around metal-rich stars*. In: Astronomy & Astrophysics **653**, A147 (2021), A147. arXiv: 2109.09252 [astro-ph.EP].
[65] Elisabeth R. Newton et al. *TESS Hunt for Young and Maturing Exoplanets (THYME). IV. Three Small Planets Orbiting a 120 Myr Old Star in the Pisces-Eridanus Stream*. In: The Astronomical Journal **161**.2, 65 (2021), p. 65. arXiv: 2102.06049 [astro-ph.EP].
[64] Ares Osborn et al. *TOI-431/HIP 26013: a super-Earth and a sub-Neptune transiting a bright, early K dwarf, with a third RV planet*. In: Monthly Newsletter of the Royal Astronomical Society **507**.2 (2021), pp. 2782–2803. arXiv: 2108.02310 [astro-ph.EP].
[63] H. P. Osborn et al. *A hot mini-Neptune in the radius valley orbiting solar analogue HD 110113*. In: Monthly Newsletter of the Royal Astronomical Society **502**.4 (2021), pp. 4842–4857. arXiv: 2101.04745 [astro-ph.EP].
[62] Joseph E. Rodriguez et al. *TESS Delivers Five New Hot Giant Planets Orbiting Bright Stars from the Full-frame Images*. In: The Astronomical Journal **161**.4, 194 (2021), p. 194. arXiv: 2101.01726 [astro-ph.EP].
[61] Lizhou Sha et al. *TOI-954 b and K2-329 b: Short-period Saturn-mass Planets that Test whether Irradiation Leads to Inflation*. In: The Astronomical Journal **161**.2, 82 (2021), p. 82. arXiv: 2010.14436 [astro-ph.EP].
[60] William C. Waalkes et al. *TOI 122b and TOI 237b: Two Small Warm Planets Orbiting Inactive M Dwarfs Found by TESS*. In: The Astronomical Journal **161**.1, 13 (2021), p. 13. arXiv: 2010.15905 [astro-ph.EP].
[59] Lauren M. Weiss et al. *The TESS-Keck Survey. II. An Ultra-short-period Rocky Planet and Its Siblings Transiting the Galactic Thick-disk Star TOI-561*. In: The Astronomical Journal **161**.2, 56 (2021), p. 56. arXiv: 2009.03071 [astro-ph.EP].
[58] George Zhou et al. *Two Young Planetary Systems around Field Stars with Ages between 20 and 320 Myr from TESS*. In: The Astronomical Journal **161**.1, 2 (2021), p. 2. arXiv: 2011.13349 [astro-ph.EP].
[57] Carl Ziegler et al. *Robo-AO and SOAR High-resolution Surveys of Exoplanet Hosting Stars*. In: Frontiers in Astronomy and Space Sciences **8**, 3 (2021), p. 3.
[56] Carl Ziegler et al. *SOAR TESS Survey. II. The Impact of Stellar Companions on Planetary Populations*. In: The Astronomical Journal **162**.5, 192 (2021), p. 192. arXiv: 2103.12076 [astro-ph.EP].
[55] David J. Armstrong et al. *A remnant planetary core in the hot-Neptune desert*. In: Nature **583**.7814 (2020), pp. 39–42. arXiv: 2003.10314 [astro-ph.EP].
[54] N. Astudillo-Defru et al. *A hot terrestrial planet orbiting the bright M dwarf L 168-9 unveiled by TESS*. In: Astronomy & Astrophysics **636**, A58 (2020), A58. arXiv: 2001.09175 [astro-ph.EP].
[53] L. G. Bouma et al. *Cluster Difference Imaging Photometric Survey. II. TOI 837: A Young Validated Planet in IC 2602*. In: The Astronomical Journal **160**.5, 239 (2020), p. 239. arXiv: 2009.07845 [astro-ph.EP].
[52] Rafael Brahm et al. *TOI-481 b and TOI-892 b: Two Long-period Hot Jupiters from the Transiting Exoplanet Survey Satellite*. In: The Astronomical Journal **160**.5, 235 (2020), p. 235. arXiv: 2009.08881 [astro-ph.EP].
[51] Theron W. Carmichael et al. *Two Intermediate-mass Transiting Brown Dwarfs from the TESS Mission*. In: The Astronomical Journal **160**.1, 53 (2020), p. 53. arXiv: 2002.01943 [astro-ph.SR].
[50] Ryan Cloutier et al. *A Pair of TESS Planets Spanning the Radius Valley around the Nearby Mid-M Dwarf LTT 3780*. In: The Astronomical Journal **160**.1, 3 (2020), p. 3. arXiv: 2003.01136 [astro-ph.EP].
[49] Jason Lee Curtis et al. *When Do Stalled Stars Resume Spinning Down? Advancing Gyrochronology with Ruprecht 147*. In: The Astrophysical Journal **904**.2, 140 (2020), p. 140. arXiv: 2010.02272 [astro-ph.SR].
[48] Allen B. Davis et al. *TOI 564 b and TOI 905 b: Grazing and Fully Transiting Hot Jupiters Discovered by TESS*. In: The Astronomical Journal **160**.5, 229 (2020), p. 229. arXiv: 1912.10186 [astro-ph.EP].
[47] Matıas R. Dıaz et al. *TOI-132 b: A short-period planet in the Neptune desert transiting a V = 11.3 G-type star* . In: Monthly Newsletter of the Royal Astronomical Society **493**.1 (2020), pp. 973–985. arXiv: 1911.02012 [astro-ph.EP].
[46] N. L. Eisner et al. *Planet Hunters TESS I: TOI 813, a subgiant hosting a transiting Saturn-sized planet on an 84-day orbit*. In: Monthly Newsletter of the Royal Astronomical Society **494**.1 (2020), pp. 750–763. arXiv: 1909.09094 [astro-ph.EP].
[45] Néstor Espinoza et al. *HD 213885b: a transiting 1-d-period super-Earth with an Earth-like composition around a bright (V = 7.9) star unveiled by TESS*. In: Monthly Newsletter of the Royal Astronomical Society **491**.2 (2020), pp. 2982–2999. arXiv: 1903.07694 [astro-ph.EP].
[44] Tianjun Gan et al. *LHS 1815b: The First Thick-disk Planet Detected by TESS*. In: The Astronomical Journal **159**.4, 160 (2020), p. 160. arXiv: 2003.04525 [astro-ph.EP].
[43] Emily A. Gilbert et al. *The First Habitable-zone Earth-sized Planet from TESS. I. Validation of the TOI-700 System*. In: The Astronomical Journal **160**.3, 116 (2020), p. 116. arXiv: 2001.00952 [astro-ph.EP].
[42] James S. Jenkins et al. *An ultrahot Neptune in the Neptune desert*. In: Nature Astronomy **4** (2020), pp. 1148–1157. arXiv: 2009.12832 [astro-ph.EP].
[41] James S. Jenkins et al. *Author Correction: An ultrahot Neptune in the Neptune desert*. In: Nature Astronomy **4** (2020), pp. 1202–1202.

[40] Andrés Jordán et al. *TOI-677b: A Warm Jupiter (P = 11.2 days) on an Eccentric Orbit Transiting a Late F-type Star*. In: The Astronomical Journal **159**.4, 145 (2020), p. 145. arXiv: 1911.05574 [astro-ph.EP].

[39] Veselin B. Kostov et al. *TOI-1338: TESS' First Transiting Circumbinary Planet*. In: The Astronomical Journal **159**.6, 253 (2020), p. 253. arXiv: 2004.07783 [astro-ph.EP].

[38] Claire Lamman et al. *Robo-AO M-dwarf Multiplicity Survey: Catalog*. In: The Astronomical Journal **159**.4, 139 (2020), p. 139. arXiv: 2001.05988 [astro-ph.SR].

[37] Monika Lendl et al. *TOI-222: a single-transit TESS candidate revealed to be a 34-d eclipsing binary with CORALIE, EulerCam, and NGTS*. In: Monthly Newsletter of the Royal Astronomical Society **492**.2 (2020), pp. 1761–1769. arXiv: 1910.05050 [astro-ph.EP].

[36] Ismael Mireles et al. *TOI 694b and TIC 220568520b: Two Low-mass Companions near the Hydrogen-burning Mass Limit Orbiting Sun-like Stars*. In: The Astronomical Journal **160**.3, 133 (2020), p. 133. arXiv: 2006.14019 [astro-ph.SR].

[35] L. D. Nielsen et al. *Three short-period Jupiters from TESS. HIP 65Ab, TOI-157b, and TOI-169b*. In: Astronomy & Astrophysics **639**, A76 (2020), A76. arXiv: 2003.05932 [astro-ph.EP].

[34] G. Nowak et al. *The CARMENES search for exoplanets around M dwarfs. Two planets on opposite sides of the radius gap transiting the nearby M dwarf LTT 3780*. In: Astronomy & Astrophysics **642**, A173 (2020), A173. arXiv: 2003.01140 [astro-ph.EP].

[33] Aaron C. Rizzuto et al. *TESS Hunt for Young and Maturing Exoplanets (THYME). II. A 17 Myr Old Transiting Hot Jupiter in the Sco-Cen Association*. In: The Astronomical Journal **160**.1, 33 (2020), p. 33. arXiv: 2005.00013 [astro-ph.EP].

[32] Romy Rodrıguez Martınez et al. *KELT-25 b and KELT-26 b: A Hot Jupiter and a Substellar Companion Transiting Young A Stars Observed by TESS*. In: The Astronomical Journal **160**.3, 111 (2020), p. 111. arXiv: 1912.01017 [astro-ph.EP].

[31] Pamela Rowden et al. *TIC 278956474: Two Close Binaries in One Young Quadruple System Identified by TESS*. In: The Astronomical Journal **160**.2, 76 (2020), p. 76. arXiv: 2006.08979 [astro-ph.SR].

[30] Johanna Teske et al. *TESS Reveals a Short-period Sub-Neptune Sibling (HD 86226c) to a Known Long-period Giant Planet*. In: The Astronomical Journal **160**.2, 96 (2020), p. 96. arXiv: 2007.13927 [astro-ph.EP].

[29] Carl Ziegler et al. *SOAR TESS Survey. I. Sculpting of TESS Planetary Systems by Stellar Companions*. In: The Astronomical Journal **159**.1, 19 (2020), p. 19. arXiv: 1908.10871 [astro-ph.EP].

[28] Brendan P. Bowler et al. *The Elusive Majority of Young Moving Groups. I. Young Binaries and Lithium-rich Stars in the Solar Neighborhood*. In: The Astrophysical Journal **877**.1, 60 (2019), p. 60. arXiv: 1903.06303 [astro-ph.SR].

[27] A. -N. Chené et al. *Investigating the origin of the spectral line profiles of the Hot Wolf-Rayet Star WR 2*. In: Monthly Newsletter of the Royal Astronomical Society **484**.4 (2019), pp. 5834–5844. arXiv: 1905.05815 [astro-ph.SR].

[26] Matıas I. Jones et al. *HD 2685 b: a hot Jupiter orbiting an early F-type star detected by TESS*. In: Astronomy & Astrophysics **625**, A16 (2019), A16. arXiv: 1811.05518 [astro-ph.EP].

[25] Samuel N. Quinn et al. *Near-resonance in a System of Sub-Neptunes from TESS*. In: The Astronomical Journal **158**.5, 177 (2019), p. 177. arXiv: 1901.09092 [astro-ph.EP].

[24] Joseph E. Rodriguez et al. *An Eccentric Massive Jupiter Orbiting a Subgiant on a 9.5-day Period Discovered in the Transiting Exoplanet Survey Satellite Full Frame Images*. In: The Astronomical Journal **157**.5, 191 (2019), p. 191. arXiv: 1901.09950 [astro-ph.EP].

[23] Andrew Vanderburg et al. *TESS Spots a Compact System of Super-Earths around the Naked-eye Star HR 858*. In: The Astrophysical Journall **881**.1, L19 (2019), p. L19. arXiv: 1905.05193 [astro-ph.EP].

[22] Lynne A. Hillenbrand et al. *Robo-AO Discovery and Basic Characterization of Wide Multiple Star Systems in the Pleiades, Praesepe, and NGC 2264 Clusters*. In: The Astronomical Journal **155**.2, 51 (2018), p. 51. arXiv: 1712.01468 [astro-ph.SR].

[21] W. S. Howard et al. *Evryscope Detection of the First Proxima Superflare: Impacts on the Atmosphere and Habitability of Proxima b*. In: Comparative Climatology of Terrestrial Planets III: From Stars to Surfaces. **2065**. LPI Contributions. 2018, p. 2039.

[20] Ward S. Howard et al. *Laser-only Adaptive Optics Achieves Significant Image Quality Gains Compared to Seeing-limited Observations over the Entire Sky*. In: The Astronomical Journal **155**.2, 59 (2018), p. 59. arXiv: 1711.04375 [astro-ph.IM].

[19] Ward S. Howard et al. *The First Naked-eye Superflare Detected from Proxima Centauri*. In: The Astrophysical Journall **860**.2, L30 (2018), p. L30. arXiv: 1804.02001 [astro-ph.EP].

[18] Carl Ziegler et al. *Measuring the Recoverability of Close Binaries in Gaia DR2 with the Robo-AO Kepler Survey*. In: The Astronomical Journal **156**.6, 259 (2018), p. 259. arXiv: 1806.10142 [astro-ph.EP].

[17] Carl Ziegler et al. *Robo-AO Kepler Survey. IV. The Effect of Nearby Stars on 3857 Planetary Candidate Systems*. In: The Astronomical Journal **155**.4, 161 (2018), p. 161. arXiv: 1712.04454 [astro-ph.EP].

[16] Carl Ziegler et al. *Robo-AO Kepler Survey. V. The Effect of Physically Associated Stellar Companions on Planetary Systems*. In: The Astronomical Journal **156**.2, 83 (2018), p. 83. arXiv: 1804.10208 [astro-ph.EP].

[15] Elisabeth R. Adams et al. *Ultra-short-period Planets in K2 with Companions: A Double Transiting System for EPIC 220674823*. In: The Astronomical Journal **153**.2, 82 (2017), p. 82. arXiv: 1611.00397 [astro-ph.EP].

[14] Dani Atkinson et al. *Probability of the Physical Association of 104 Blended Companions to Kepler Objects of Interest Using Visible and Near-infrared Adaptive Optics Photometry*. In: The Astronomical Journal **153**.1, 25 (2017), p. 25. arXiv: 1609.09512 [astro-ph.EP].

[13] Jessica S. Schonhut-Stasik et al. *Robo-AO Kepler Asteroseismic Survey. I. Adaptive Optics Imaging of 99 Asteroseismic Kepler Dwarfs and Subgiants*. In: The Astrophysical Journal **847**.2, 97 (2017), p. 97. arXiv: 1701.07841 [astro-ph.SR].

[12] Carl Ziegler et al. *Robo-AO Kepler Planetary Candidate Survey. III. Adaptive Optics Imaging of 1629 Kepler Exoplanet Candidate Host Stars*. In: The Astronomical Journal **153**.2, 66 (2017), p. 66. arXiv: 1605.03584 [astro-ph.EP].

[11] Christoph Baranec et al. *Robo-AO Kepler Planetary Candidate Survey. II. Adaptive Optics Imaging of 969 Kepler Exoplanet Candidate Host Stars*. In: The Astronomical Journal **152**.1, 18 (2016), p. 18. arXiv: 1604.08604 [astro-ph.EP].

[10] Ian J. M. Crossfield et al. *197 Candidates and 104 Validated Planets in K2's First Five Fields*. In: The Astrophysical Journals **226**.1, 7 (2016), p. 7. arXiv: 1607.05263 [astro-ph.EP].

[9] Nicholas M. Law, Carl Ziegler, and Andrei Tokovinin. *SRAO: the first southern robotic AO system*. In: Optical and Infrared Interferometry and Imaging V. **9907**. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. 2016, 99070K.

[8] Joshua E. Schlieder et al. *Two Small Temperate Planets Transiting Nearby M Dwarfs in K2 Campaigns 0 and 1*. In: The Astrophysical Journal **818**.1, 87 (2016), p. 87. arXiv: 1601.02706 [astro-ph.EP].

[7] Carl Ziegler, Nicholas M. Law, and Andrei Tokovinin. *SRAO: optical design and the dual-knife-edge WFS*. In: Adaptive Optics Systems V. **9909**. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. 2016, 99093Z. arXiv: 1608.00579 [astro-ph.IM].

[6] Carl Ziegler et al. *The Robo-AO KOI survey: laser adaptive optics imaging of every Kepler exoplanet candidate*. In: Adaptive Optics Systems V. **9909**. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. 2016, 99095U. arXiv: 1608.00575 [astro-ph.EP].

[5] Trevor J. David et al. *HII 2407: An Eclipsing Binary Revealed By K2 Observations of the Pleiades*. In: The Astrophysical Journal **814**.1, 62 (2015), p. 62. arXiv: 1510.06399 [astro-ph.SR].

[4] Benjamin J. Fulton et al. *KELT-8b: A Highly Inflated Transiting Hot Jupiter and a New Technique for Extracting High-precision Radial Velocities from Noisy Spectra*. In: The Astrophysical Journal **810**.1, 30 (2015), p. 30. arXiv: 1505.06738 [astro-ph.EP].

[3] Carl Ziegler et al. *Multiplicity of the Galactic Senior Citizens: A High-resolution Search for Cool Subdwarf Companions*. In: The Astrophysical Journal **804**.1, 30 (2015), p. 30. arXiv: 1411.3336 [astro-ph.SR].

[2] Nicholas M. Law et al. *Robotic Laser Adaptive Optics Imaging of 715 Kepler Exoplanet Candidates Using Robo-AO*. In: The Astrophysical Journal **791**.1, 35 (2014), p. 35. arXiv: 1312.4958 [astro-ph.EP].

[1] Vaiva Krungleviciute et al. *Neon and CO2 Adsorption on Open Carbon Nanohorns*. In: Langmuir **29**.30 (2013). PMID: 23802764, pp. 9388–9397. eprint: https://doi.org/10.1021/la401033u.