

Curriculum Vitae - Christoph Baranec

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Professional Preparation

California Institute of Technology	CA	Astronomy	B.S., 2001
University of Arizona	AZ	Optical Sciences	Ph. D., 2007

Appointments

2015-Present Adjunct Assistant Professor, University of Hawai'i at Hilo
 2013-Present Assistant Astronomer (tenure-track) at the University of Hawai'i at Mānoa
 2007-2013 Postdoctoral Scholar in Astronomy at the California Institute of Technology
 2002-2007 Graduate Student in Optical Sciences at the University of Arizona
 2001-2002 Associate Research Engineer at the California Institute of Technology

Awards

2014 - 2016 Alfred P. Sloan Research Fellowship
 2017 University of Hawaii Board of Regents' Excellence in Research Award

Grants

Total competitive amount awarded to date as PI: \$2,805,953

Principal Investigator (PI) for the Robo-AO adaptive optics and science system. (NSF grant AST-0906060: \$576,782; IUCAA collaborator funds: \$615,000; gift funding from Samuel Oschin: \$100,000)

PI for "Research on Astrometric Error Sources in HgCdTe Arrays." (Office of Naval Research/DURIP grant N00014-11-1-0903: \$208,525)

PI for "A near-infrared science and tip-tilt camera for Robo-AO." (NSF grant AST-1207891: \$261,921)

PI for "Automation and initial science demonstration of the Robo-AO laser guide star and science system." (Mt. Cuba Astronomical Foundation: \$99,306)

PI for the real-time software development sub-award of Pomona College's Table mountain adaptive optics system. (NSF grant AST-0960343: \$100,000)

PI for "Extremely wide-field adaptive optics for precision astronomy of exoplanets." (Mt. Cuba Astronomical Foundation: \$96,400)

US-PI for "Workshop on astronomy with adaptive optics on moderate-sized telescopes" at IUCAA, Pune, India. (IUSSTF 75-2010-WS-Adaptive Optics: \$38,000)

PI for "Upgrade to Keck's interface with US Strategic Command regarding use of lasers." (W. M. Keck Observatory: \$32,861)

Institutional-PI for "The Robo-AO survey of Kepler exoplanet hosts." (NASA Exoplanets Research Program NNX15AC91G: \$168,161 out of \$437,362 total)

"Alfred P. Sloan Research Fellowship." (Alfred P. Sloan Foundation, \$50,000)

Instrument Scientist for "Science with Robo-AO at the Kitt Peak 2.1m telescope." (NOAO: Access to the Kitt Peak 2.1m telescope, \$0)

Subaward PI for "Mechanical Engineering support for Robo-AO Kitt Peak." (Rohan Murty prime-grantor; Caltech sub-grantor: \$64,288)

Subaward PI for "Infrared camera deployment in support of *Enriching the harvest of exoplanets*," (John Templeton Foundation prime-grantor; Caltech sub-grantor: \$56,611)

PI for "An infrared avalanche photodiode array camera for Robo-AO Kitt Peak." (Mt. Cuba Astronomical Foundation: \$100,000)

Subaward PI for "Robo-AO Kitt Peak observing support for *Disk Detective Follow-up Program*," (NASA Exoplanets Research Program NNX17AD64G, PI Marc Kuchner: \$22,128)

PI for "A robotic laser AO facility for rapid visible/near-infrared imaging and the demonstration of hybrid techniques," (NSF grant AST-1712014: \$930,970)

Co-PI for "Refining the Radii of Exoplanet Host Stars," (PI D. Huber: NSF grant AST-1717000, \$278,033)

Students

Graduate (First and second year projects are denoted as 699-1 and 699-2 respectively)

- Maxwell Service, (2013) 699-1, "Exploring diffraction effects in Shack-Hartmann wavefront sensors."
- Dani Atkinson, (2014) 699-2, "Characterization of companions and implications for planet candidates of Kepler objects of interest." (2017AJ....153...25A).
- Larissa Nofi, (2014) 699-1, "A measure of stellar binarity among Kepler target stars." This project was presented as a poster at the 2015 IAU and 2015 AAS Extreme Solar Systems conferences.
- Maïssa Salama, (2015) 699-1, "Optimizing Robo-AO at Kitt Peak and Installing a New Infrared Camera." Maïssa presented this work as a talk at 2016 SPIE Astronomical Telescopes and Instrumentation (2016SPIE.9909E..1AS). Maïssa won a competitive SPIE Optics and Photonics Education Scholarship for her work with Robo-AO.
- Maïssa Salama, (2016) 699-2, "Preparing a Large Adaptive Optics Survey Searching for Brown Dwarfs and Wide-Orbit Exoplanets with Robo-AO."

- Maïssa Salama, (2017+) Dissertation – to be approved, “A Large Imaging Survey for Young Brown Dwarfs and Exoplanets at Wide Separations.” (Co-advised with Michael Liu.)
- Jessica Schonhut-Stasik, (2017) 699-1, “The Effect of Stellar Multiplicity on Oscillations in Cool Stars.” (Co-advised with Dan Huber.)
- James Ou, (2017) 699-1, "Optimizing Robo-AO Data Reduction Pipelines in the Near-IR."

Undergraduate Intern mentor

- Jessica Schonhut-Stasik, (2015-2017), “Robo-AO Kepler Asteroseismic Survey. I. Adaptive optics imaging of 99 asteroseismic Kepler dwarfs and subgiants,” submitted to AJ (2017 arXiv170107841S).

Summer Undergraduate Research Fellowship/Research Experiences for Undergraduates mentor

- Matthew Feldman, 2008
- Marland Sitt, 2010
- Alexander Rudy, 2010
- Ankit Arya, 2011
- Athanasios Papadopoulos, 2011
- Corinne Vassallo, 2012
- Victoria "Ashley" Villar, Minority Undergraduate Research Fellow, 2012
- Chatarin "Mee" Wong-u-railertkun, 2013
- Jaren Ashcraft, 2017
- Claire Lamman, 2017

Teaching

Fall 2015 – Optics (Physics 331) at UH Hilo, (substantially revised class)

Fall 2016 – Senior Research Projects (Astronomy 494) at UH Mānoa, (new class)

Fall 2017 – Optics (Physics 331) at UH Hilo

Service

- UCSC ISEE Professional Development Program: Participant, 2014 and 2015. Awarded a Certificate in Inclusive Inquiry STEM Education for design and teaching work on the ‘Escape from ZombieLand’ computing inquiry at the Akami PREP course in 2015.
- Institute for Astronomy Outreach (2013-present): Featured speaker at 9 public/outreach events (‘Imiloa Mauna Kea Skies, IfA Open House, Frontiers in Astronomy Community Event, The Universe Tonight @ Maunakea Visitors’ Center, HawaiiCon, Office Mauna Kea Management Weed Pull, Pacific Asian Consortium for International Business Education and Research conference, Hilo Bay Rotary Club) and participant in local outreach events (Journey Through the Universe, AstroDay, Hilo Robotics Competition, Waikaloa Village

Winterfest, Onizuka Day, IfA Open House, Kealakehe Elementary School Science Night, Hilo Intermediate Science Fair, Panaewa Homestead Kuhio Day Celebration).

- Project reviewer: CHARA adaptive optics wavefront sensor design review, 2013; Giant Magellan Telescope adaptive optics system review, 2013.
- Organizer of the IfA-Hilo TechTalk Series (<http://ifa.hawaii.edu/~baranec/tt.shtml>) 2013-
- Referee: Optics Letters, Applied Optics, Optics Express, MNRAS, PASP, JATIS.
- Member of Institute for Astronomy committees:
 - Computer Advisory Committee (Addresses computing issues), 2015-
 - Faculty Advisory Committee (Advises the director on important matters), 2016-
 - Scientific Staff Screening Committee (Faculty hiring committee), 2016-
 - Time Allocation Committee, 2014-2017
- Member of local committees:
 - Maunakea Laser Operators Group (MLOG), 2013-
 - UH Hilo Physics and Astronomy Faculty Search Committee, 2016
- Program committee: SPIE AO 2018

Memberships

- SPIE - The International Society for Optical Engineering (2004-lifetime; Senior Member in 2011).
- OSA - Optical Society of America (2005-lifetime; Senior Member in 2017).

References

Prof. Roger Angel (range1@as.arizona.edu, 520 621 6541)

Prof. Shrinivas Kulkarni (srk@astro.caltech.edu, 626 395 4010)

Prof. Günther Hasinger (ghasinger54@gmail.com, now at ESA)

Dr. Michael Hart (mhart@as.arizona.edu, 520 621 8353)

Dr. Richard Dekany (rgd@astro.caltech.edu, 626 395 6798)

Bibliography

Optical Science and Technology (Refereed)

- Improved Image Quality Over 10' Fields with the `Imaka Ground Layer Adaptive Optics Experiment

F. Abdurrahman, J. Lu, M. Chun, M. Service, O. Lai, D. Föhring, D. Toomey, & C. Baranec
AAS journals, *in submission*, 2018.

57. Laser-only adaptive optics achieves significant image quality gains compared to seeing-limited observations over the entire sky

W. Howard, N. Law, C. Ziegler, **C. Baranec**, & R. Riddle
The Astronomical Journal, 155, 59, 2018.

56. The performance of the Robo-AO laser guide star adaptive optics system at the Kitt Peak 2.1m Telescope

R. Jensen-Clem, D. Duev, R. Riddle, M. Salama, **C. Baranec**, N. Law, & S. Kulkarni
The Astronomical Journal, 155, 32, 2018.

55. Automated Adaptive Optics <https://arxiv.org/abs/1709.07103>

C. Baranec, R. Riddle & N. Law

in press, 2017. Chapter in “Vol 3: UV, Optical & IR Instrumentation: Part 2:” of The WSPC Handbook of Astronomical Instrumentation, ed. D. N. Burrows.

54. High-speed imaging and wavefront sensing with an infrared avalanche photodiode array

C. Baranec, D. Atkinson, R. Riddle, D. Hall, S. Jacobson, N. Law & M. Chun
The Astrophysical Journal, 809, 70, 2015.

53. High-efficiency autonomous laser adaptive optics

C. Baranec, R. Riddle, N. Law, A. N. Ramaprakash, S. Tendulkar, K. Hogstrom, K. Bui, M. Burse, P. Chordia, H. Das, R. Dekany, S. Kulkarni & S. Punnadi
The Astrophysical Journal Letters, 790, L8, 2014.

52. PALM-3000: Exoplanet adaptive optics for the 5-meter Hale Telescope

R. Dekany, J. Roberts, R. Burruss, A. Bouchez, T. Truong, **C. Baranec**, S. Guiwits, D. Hale, J. Angione, T. Trinh, J. Zolkower, J. C. Shelton, D. Palmer, J. Henning, E. Croner, M. Troy, D. McKenna, J. Tesch, S. Hildebrandt & J. Milburn
The Astrophysical Journal, 776, 130, 2013.

51. Bringing the Visible Universe into Focus with Robo-AO

C. Baranec, R. Riddle, N. Law, A. N. Ramaprakash, S. Tendulkar, K. Bui, M. Burse, P. Chordia, H. Das, J. Davis, R. Dekany, M. Kasliwal, S. Kulkarni, T. Morton, E. Ofek & S. Punnadi
The Journal of Visualized Experiments, 72, e50021, 2013.

50. A ground-layer adaptive optics system with multiple laser guide stars

M. Hart, N. M. Milton, **C. Baranec**, K. Powell, T. Stalcup, D. McCarthy, C. Kulesa & E. Bendek
Nature, 466, 727-729, 2010.

49. Design considerations for low-light level low-Fresnel number optical systems

C. Baranec

Applied Optics, 48, 6259-6263, 2009.

48. On-sky wide field adaptive optics correction using multiple laser guide stars at the MMT

C. Baranec, M. Hart, N. M. Milton, T. Stalcup, K. Powell, M. Snyder, V. Vaitheeswaran, D.

McCarthy & C. Kulesa
The Astrophysical Journal, 693, 1814-1820, 2009.

47. Study of a MEMS-based Shack-Hartmann wavefront sensor with adjustable pupil sampling for astronomical adaptive optics

C. Baranec & R. Dekany
Applied Optics, 47, 5155-5162, 2008.

46. Ground-layer wavefront reconstruction from multiple natural guide stars

C. Baranec, M. Lloyd-Hart & N. M. Milton
The Astrophysical Journal, 661, 1332-1338, 2007.

45. Experimental results of ground-layer and tomographic wavefront reconstruction from multiple laser guide stars

M. Lloyd-Hart, C. Baranec, N. M. Milton, T. Stalcup, M. Snyder & J. R. P. Angel
Optics Express, 14, 7541-7551, 2006.

44. First tests of wavefront sensing with a constellation of laser guide beacons

M. Lloyd-Hart, C. Baranec, N. M. Milton, T. Stalcup, M. Snyder, N. Putnam & J. R. P. Angel
The Astrophysical Journal, 634, 679-686, 2005.

43. Concept for a laser guide beacon Shack-Hartmann wave-front sensor with dynamically steered subapertures

C. Baranec, B. Bauman & M. Lloyd-Hart
Optics Letters, 30, 693-695, 2005.

Astronomy Science (Refereed; Robo-AO)

42. Robo-AO Kepler Survey IV: The effect of nearby stars on 3857 planetary candidate systems

C. Ziegler, N. Law, C. Baranec, R. Riddle, D. Duev, W. Howard, R. Jensen-Clem, S. Kulkarni, T. Morton, & M. Salama
The Astronomical Journal, 155, 161, 2018.

41. Robo-AO Discovery and Basic Characterization of Wide Multiple Star Systems in the Pleiades, Praesepe, and NGC 2264 Clusters

L. A. Hillenbrand, C. Zhang, R. Riddle, C. Baranec, C. Ziegler, N. Law, & J. Stauffer
The Astronomical Journal, 155, 51, 2018.

40. K2-104b - An eccentric 6.57 day transiting hot Jupiter in Virgo

H. A. C. Giles, D. Bayliss, N. Espinoza, R. Brahm, S. Blanco-Cuaresma, A. Shporer, D. Armstrong, C. Lovis, S. Udry, F. Bouchy, M. Marmier, A. Jordán, J. Bento, A. Collier Cameron, R. Sefako, W. D. Cochran, F. Rojas, M. Rabus, J.S. Jenkins, M. Jones, B. Pantoja, M. Soto, R. Jensen-Clem, D. A. Duev, M. Salama, R. Riddle, C. Baranec, and N. M. Law
MNRAS, 475, 1809, 2017.

39. Robo-AO Kepler Asteroseismic Survey. I. Adaptive optics imaging of 99 asteroseismic Kepler dwarfs and subgiants

J. Schonhut-Stasik, C. Baranec, D. Huber, C. Ziegler, D. Atkinson, E. Gaidos, N. Law, R.

Riddle, J. Hagelberg, N. van der Marel, and K. Hodapp
The Astrophysical Journal, 847, 97, 2017.

38. Magnetic Inflation and Stellar Mass I: Revised Parameters for the Component Stars of the Kepler Low-mass Eclipsing Binary T-Cyg1-12664

E. Han, P. Muirhead, J. Swift, C. Baranec, N. Law, R. Riddle, D. Atkinson, G. Mace, and D. DeFelippis
The Astronomical Journal, 154, 3, 2017.

37. Neptune long-lived atmospheric features in 2013-2015 from small (28-cm) to large (10-m) telescopes

R. Hueso, I. de Pater, A. Simon, A. Sánchez-Lavega, M. Delcroix, M. Wong, J. Tollefson, C. Baranec, K. de Kleer, S. Luszcz-Cook, G. Orton, H. Hammel, J. Gómez-Forrellad, I. Ordoñez-Etxeberria, L. Sromovsky, P. Fry, F. Colas, J. Rojas, S. Pérez-Hoyos, P. Gorczynski, J. Guarro, W. Kivits, P. Miles, D. Millika, P. Nicholas, J. Sussenbach, A. Wesley, K. Sayanagi, S. Ammons, E. Gates, D. Gavel, E. Garcia, N. M. Law, I. Mendikoa & R. Riddle
Icarus, 295, 89, 2017.

36. Ultra Short Period Planets in K2 with companions: a double transiting system for EPIC 220674823

E. R. Adams, B. Jackson, M. Endl, W. Cochran, P. MacQueen, D. Duev, R. Jensen-Clem, M. Salama, C. Ziegler, C. Baranec, S. Kulkarni, N. Law & R. Riddle
The Astronomical Journal, 153, 82, 2017.

35. Two small planets transiting HD 3167

A. Vanderburg, A. Bieryla, D. Duev, R. Jensen-Clem, D. Latham, A. Mayo, C. Baranec, P. Berlind, S. Kulkarni, N. Law, M. Nieberding, R. Riddle & M. Salama
The Astrophysical Journal Letters, 829, L9, 2016.

34. Robo-AO Kepler Planetary Candidate Survey III: Adaptive Optics Imaging of 1629 Kepler Exoplanet Candidate Host Stars

C. Ziegler, N. Law, T. Morton, C. Baranec, R. Riddle, D. Atkinson, A. Baker, S. Roberts & D. Ciardi
The Astronomical Journal, 153, 66, 2017.

33. 197 Candidates and 104 Validated Planets in K2's First Five Fields

I. Crossfield, D. Ciardi, E. Petigura, E. Sinukoff, J. Schlieder, A. Howard, C. Beichman, H. Isaacson, C. Dressing, J. Christiansen, B. J. Fulton, S. Lépine, L. Weiss, L. Hirsch, J. Livingston, C. Baranec, N. Law, R. Riddle, C. Ziegler, S. Howell, E. Horch, M. Everett, J. Teske, A. Martinez, C. Obermeier, B. Benneke, N. Scott, K. Aller, B. Hansen, L. Mancini, S. Ciceri, R. Brahm, A. Jordán, H. Knutson, T. Henning, M. Bonnefoy, M. Liu, J. Crepp, J. Lothringer, P. Hinz, V. Bailey, A. Skemer & D. Defreere
The Astrophysical Journal Supplement, 226, 7, 2016.

32. Five Planets Transiting a Ninth Magnitude Star

A. Vanderburg, J. Becker, M. Kristiansen, A. Bieryla, D. Duev, R. Jensen-Clem, T. Morton, D. Latham, F. Adams, C. Baranec, P. Berlind, M. Calkins, G. Esquerdo, S. Kulkarni, N. Law, R. Riddle, M. Salama, A. Schmitt
The Astrophysical Journal Letters, 827, L10, 2016.

- 31. Probability of physical association of 104 blended companions to Kepler objects of interest using visible and near-infrared adaptive optics photometry**
D. Atkinson, C. Baranec, C. Ziegler, N. Law, R. Riddle & T. Morton
The Astronomical Journal, 153, 25, 2016.
- 30. Robo-AO Kepler Planetary Candidate Survey II: Adaptive Optics Imaging of 969 Kepler Exoplanet Candidate Host Stars**
C. Baranec, C. Ziegler, N. Law, T. Morton, R. Riddle, D. Atkinson, J. Schonhut & J. Crepp
The Astronomical Journal, 152, 18, 2016.
- 29. Eleven multi-planet systems from K2 campaigns 1 & 2 and the masses of two hot super-Earths**
E. Sinukoff, A. Howard, E. Petigura, J. Schlieder, I. Crossfield, D. Ciardi, B. J. Fulton, H. Isaacson, K. Aller, C. Baranec, C. Beichman, B. Hansen, H. Knutson, N. Law, M. Liu & R. Riddle
The Astrophysical Journal, 827, 78, 2016.
- 28. Two small temperate planets transiting nearby M dwarfs in K2 campaigns 0 and 1**
J. Schlieder, I. Crossfield, E. Petigura, A. Howard, K. Aller, E. Sinukoff, H. Isaacson, B. J. Fulton, D. Ciardi, M. Bonnefoy, C. Ziegler, T. Morton, S. Lépine, C. Obermeier, M. Liu, V. Bailey, C. Baranec, C. Beichman, D. Defrère, T. Henning, P. Hinz, N. Law, R. Riddle & A. Skemer
The Astrophysical Journal, 818, 87, 2016.
- 27. Planet Hunters. VIII. Characterization of 41 Long-Period Exoplanet Candidates from the Kepler Archival Data**
J. Wang, D. Fischer, T. Barclay, A. Picard, B. Ma, B. Bowler, J. Schmitt, T. Boyajian, K. Jek, D. LaCourse, C. Baranec, R. Riddle, N. Law, C. Lintott, K. Schawinski, D. Simister, B. Grégoire, S. Babin, T. Poile, T. Jacobs, T. Jebson, M. Omohundro, H. Schwengeler, J. Sejpká, I. Terentev, R. Gagliano, J.-P. Paakkonen, H. Berge, T. Winarski, G. Green & A. Schmitt
The Astrophysical Journal, 815, 127, 2015.
- 26. HII 2407: An Eclipsing Binary Revealed by K2 Observations of the Pleiades**
T. David, J. Stauffer, L. Hillenbrand, A. Cody, K. Conroy, K. Stassun, B. Pope, S. Aigrain, E. Gillen, A. Cameron, D. Barrado y Navascues, L. Rebull, H. Isaacson, G. Marcy, C. Zhang, R. Riddle, C. Ziegler, N. Law & C. Baranec
The Astrophysical Journal, 814, 62, 2015.
- 25. KELT-8b: A highly inflated transiting hot Jupiter and a new technique for extracting high-precision radial velocities from noisy spectra**
B. J. Fulton, K. Collins, B. Gaudi, K. Stassun, J. Pepper, T. Beatty, R. Siverd, K. Penev, A. Howard, C. Baranec, G. Corfini, J. Eastman, J. Gregorio, N. Law, M. Lund, T. Oberst, M. Penny, R. Riddle, J. Rodriguez, D. Stevens, R. Zambelli, C. Ziegler, A. Bieryla, G. D'Ago, D. DePoy, E. Jensen, J. Kielkopf, D. Latham, M. Manner, J. Marshall, K. McLeod & P. Reed
The Astrophysical Journal, 810, 30, 2015.
- 24. Planets Around Low-Mass Stars (PALMS). V. Age-Dating Low-Mass Companions to Kinematic Members and Interlopers of Young Moving Groups**
B. P. Bowler, E. Shkolnik, M. Liu, J. Schlieder, A. Mann, T. Dupuy, S. Hinkley, J. Crepp, J. Johnson, A. Howard, L. Flagg, A. Weinberger, K. Aller, K. Allers, W. Best, N. Deacon, M.

Kotson, B. Montet, G. Herczeg, **C. Baranec**, R. Riddle, N. Law, E. Nielsen, Z. Wahhaj, B. Biller & T. Hayward

The Astrophysical Journal, 806, 62, 2015.

23. Characterizing K2 planet discoveries: A super-Earth transiting the bright K-dwarf HIP 116454

A. Vanderburg, B. Montet, J. Johnson, L. Buchhave, L. Zeng, F. Pepe, A. Cameron, D. Latham, E. Molinari, S. Udry, C. Lovis, J. Matthews, C. Cameron, N. Law, B. Bowler, R. Angus, **C. Baranec**, A. Bieryla, W. Boschin, D. Charbonneau, R. Cosentino, X. Dumusque, P. Figueira, D. Guenther, A. Harutyunyan, C. Hellier, R. Kuschnig, M. Lopez-Morales, M. Mayor, G. Micela, A. Moffat, M. Pedani, D. Phillips, G. Piotto, D. Pollacco, D. Queloz, K. Rice, R. Riddle, J. Rowe, S. Rucinski, D. Sasselov, D. Ségransan, A. Sozzetti, A. Szentgyorgyi, C. Watson & W. Weiss

The Astrophysical Journal, 800, 59, 2015.

22. Know the star, know the planet. IV. A stellar companion to the host star of the eccentric exoplanet HD8673b

L. C. Roberts, B. Mason, C. Neyman, Y. Wu, R. Riddle, C. Shelton, J. Angione, **C. Baranec**, A. Bouchez, K. Bui, R. Burruss, M. Burse, P. Chordia, E. Croner, H. Das, R. Dekany, S. Guiwits, D. Hale, J. Henning, S. Kulkarni, N. Law, D. McKenna, J. Milburn, D. Palmer, S. Punnadi, A. Ramaprakash, J. Roberts, S. Tendulkar, T. Trinh, M. Troy, T. Truong & J. Zolkower

The Astronomical Journal, 149, 144, 2015.

21. Know the star, know the planet. III. Discovery of late-type companions to two exoplanet host stars

L. C. Roberts, A. Tokovinin, B. Mason, R. Riddle, W. Hartkopf, N. Law & **C. Baranec**

The Astronomical Journal, 149, 118, 2015.

20. Characterizing the Cool KOIs. VII. Refined physical properties of the eclipsing brown dwarf LHS6343C

B. Montet, J. Johnson, P. Muirhead, A. Villar, C. Vassallo, **C. Baranec**, N. Law, R. Riddle, G. Marcy, A. Howard & H. Isaacson

The Astrophysical Journal, 800, 134, 2015.

19. Multiplicity of the Galactic Senior Citizens: A high-resolution search for cool subdwarf companions

C. Ziegler, N. M. Law, **C. Baranec**, R. Riddle & J. Fuchs

The Astrophysical Journal, 804, 30, 2015.

18. An ancient extrasolar system with five sub-Earth-size planets

T. Campante, T. Barclay, J. Swift, D. Huber, V. Adibekyan, W. Cochran, C. J. Burke, H. Isaacson, E. Quintana, G. Davies, V. Aguirre, D. Ragozzine, R. Riddle, **C. Baranec**, S. Basu, W. Chaplin, J. Christensen-Dalsgaard, T. Metcalfe, T. Bedding, R. Handberg, D. Stello, J. Brewer, S. Hekker, C. Karoff, R. Kolbl, N. Law, M. Lundkvist, A. Miglio, J. Rowe, N. Santos, C. Van Laerhoven, T. Arentoft, Y. Elsworth, D. Fischer, S. Kawaler, H. Kjeldsen, M. Lund, G. Marcy, S. Sousa, A. Sozzetti & T. R. White

The Astrophysical Journal, 799, 170, 2015.

17. The Near-Ultraviolet Luminosity Function of Young, Early M-Dwarf Stars

M. Ansdell, E. Gaidos, A. Mann, S. Lépine, D. James, A. Buccino, **C. Baranec**, N. Law, R.

Riddle, P. Mauas & R. Petrucci
The Astrophysical Journal, 798, 41, 2015.

16. Characterization of the atmosphere of the hot Jupiter HAT-P-32Ab and the M-dwarf companion HAT-P-32B

M. Zhao, J. O'Rourke, J. Wright, H. Knutson, A. Burrows, J. Fortney, H. Ngo, B. J. Fulton, **C. Baranec**, R. Riddle, N. Law, P. Muirhead, S. Hinkley, A. Showman, J. Curtis & R. Burruss
The Astrophysical Journal, 796, 115, 2014.

15. A survey of the high order multiplicity of nearby Solar-type binary stars with Robo-AO

R. Riddle, A. Tokovinin, B. Mason, W. Hartkopf, L. Roberts, **C. Baranec**, N. Law, K. Bui, M. Burse, H. Das, R. Dekany, S. Kulkarni, S. Punnadi, A. N. Ramaprakash & S. Tendulkar
The Astrophysical Journal, 799, 4, 2015.

14. Characterizing the Cool KOIs. VI. H- and K-band Spectra of Kepler M Dwarf Planet-Candidate Hosts

P. Muirhead, J. Becker, G. Feiden, B. Rojas-Ayala, A. Vanderburg, E. Price, R. Thorp, N. Law, R. Riddle, **C. Baranec**, K. Hamren, E. Schlawin, K. Covey, J. Johnson & J. Lloyd
The Astrophysical Journal Supplement, 213, 5, 2014.

13. Robotic laser-adaptive-optics imaging of 715 Kepler exoplanet candidates using Robo-AO

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The Astrophysical Journal, 791, 35, 2014.

12. Characterizing the Cool KOIs. V. KOI-256: A Mutually Eclipsing Post-common Envelope Binary

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Patents

Compact Laser Projection Systems and Methods

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Laser Beam Guidance Systems and Methods

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Selected Colloquia/Invited Talks

22nd International Microlensing Conference (Invited), Auckland, NZ, January 26, 2018.

University of Michigan Astronomy Seminar, Ann Arbor, MI, May 10th, 2017.

UCSC Astronomy Colloquium, Santa Cruz, CA, April 5th, 2017.

NOAO/Steward Observatory Joint Colloquium, Tucson, AZ, April 21st, 2016.

Future AO for the VLT, ESO HQ, Garching, Germany, September 16th, 2015.

Canada-France-Hawai'i Telescope Headquarters, Waimea, HI, April 30th, 2015.

UCSB Astrophysics Seminar, Santa Barbara, CA, May 21st, 2014.

Yale Astronomy Colloquium, New Haven, CT, April 17th, 2014.

Boston University Astrophysics Colloquium, Boston, MA, April 16th, 2014.

Caltech Astronomy Colloquium, Pasadena, CA, December 4th, 2013.

UCLA Astrophysics Colloquium, Los Angeles, CA, November 13th, 2013.

Keck Observatory Headquarters, Waimea, HI, September 26th, 2013.

Rochester Institute of Technology, Physics and Center for Detectors Colloquium, Rochester, NY, April 30th, 2013.

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