



## Bruce Macintosh

Professor of Physics

 Curriculum Vitae available Online

### Bio

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#### BIO

Bruce Macintosh's research focusses on the study of extrasolar planets, in particular the study of such planets through direct imaging, and on using adaptive optics to shape the wavefronts of light for a variety of applications. Direct imaging of extrasolar planets involves blocking, suppressing, and subtracting the light of the bright parent star so that a planet hundreds of thousands of times fainter can be seen and studied in detail. Prof. Macintosh is the Principal Investigator of the Gemini Planet Imager <http://planetimager.org/>, an advanced adaptive optics planet-finder for the Gemini South telescope. He also leads a Science Investigation Team for the coronagraph instrument on the WFIRST mission, focused on imaging and spectroscopy of extrasolar planets.

#### ACADEMIC APPOINTMENTS

- Professor, Physics
- Member, Bio-X

#### ADMINISTRATIVE APPOINTMENTS

- Deputy Director, Kavli Institute for Particle Astrophysics and Cosmology, (2018- present)
- Professor of Physics, Kavli Institute for Particle Astrophysics and Cosmology, Department of Physics, Stanford University, (2013- present)
- Associate Director for High-Contrast AO, National Science Foundation Center for Adaptive Optics, (2005-2009)
- Physicist, Applied Physics Section, Physics Division Lawrence Livermore National Laboratory, (2001-2014)
- Physicist, Institute of Geophysics and Planetary Physics Lawrence Livermore National Laboratory, (1997-2001)
- Postdoctoral Researcher, Institute of Geophysics and Planetary Physics Lawrence Livermore National Laboratory, (1994-1997)

#### HONORS AND AWARDS

- Physics Directorate Award for Outstanding Postdoc Mentoring, LLNL (2013)
- Elected Fellow, SPIE (2011)
- Newcomb Cleveland Prize for best paper published in Science, American Association for Advancement in Science (2010)
- Science and Technology award for outstanding research, LLNL (2010)
- Science and Technology Directorate award for excellence in publication, LLNL (2009)
- Most significant paper in adaptive optics, OSA (2004)

#### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, National Research Council ASTRO2020 Decadal Survey Steering Committee (2019 - present)
- Member, National Academy of Sciences Exoplanet Science Strategy Committee (2018 - 2019)

- Member, National Academy of Sciences Committee on Astronomy and Astrophysics (CAA) (2015 - 2019)
- Member, National Academy of Sciences Committee on progress of the 2010 Decadal Survey (2015 - 2016)
- Member, Scientific Organizing Committee, Sagan Exoplanet Summer Workshop (2014 - 2014)
- WFIRST Science Definition Team and Formulation Science Working Group Member, NASA (2013 - present)
- Convener, Thirty Meter Telescope Exoplanet International Science Development Team (2013 - 2018)
- Member, Program Committee, “Adaptive Optics Systems and Applications” 2012 SPIE Astronomical Instrumentation (2012 - 2012)
- Fellow, SPIE (2011 - present)
- Conceptual Design Reviewer, LSST Camera Systems (2011 - 2011)
- Member, Program Committee, “Techniques for detection of exoplanets” 2011 SPIE Optics and Photonics (2011 - 2011)
- Member, NASA Exoplanet Analysis Group Executive Committee (2010 - 2012)
- Panel Member, National Research Council ASTRO2010 Decadal Survey: Program Prioritization Panel on Ground Based Optical/IR (2009 - 2010)
- IRIS Science Team Member, Thirty meter Telescope (2008 - present)
- Program Committee Member, “Adaptive Optics Systems and Applications” SPIE Astronomical Instrumentation (2008 - 2008)
- Astronomy and Astrophysics Advisory Committee member, Exoplanet Task Force (ExoPTF) (2007 - 2008)
- Member, NASA APRA Review Panel (X-ray) (2007 - 2008)
- Member, European Southern Observatory Very Large Telescope SPHERE planet finder (2007 - 2008)
- Member, Giant Segmented Mirror Telescope Science Working Group (2007 - 2008)
- Scientific Organizing Committee Member, Spirit of Lyot conference (2007 - 2007)
- Member, Keck Next Generation AO System Science Team (2006 - 2010)
- Member, Gemini Adaptive Optics Working Group (2006 - 2009)
- Narrow-field IR AO System Conceptual Design Reviewer, Thirty Meter Telescope (2006 - 2006)
- Laboratory Directed Research and Development selection committee Member, Lawrence Livermore National Laboratory (2005 - 2007)
- Chair, Next-Generation Wavefront Controller CDR, Keck Observatory (2005 - 2005)
- Member Terrestrial Planet Finder instrument conceptual design selection, NASA (2005 - 2005)
- Terrestrial Planet Finder Technology Advisory Committee Member, Jet Propulsion Laboratory (2004 - 2006)
- AO Development Plan Steering Committee Member, National Science Foundation (2004 - 2004)
- Member NSF Major Research Instrumentation Astronomy Review Panel, National Science Foundation (2003 - 2003)
- Member, Keck Observatory Adaptive Optics Working Group (2002 - 2008)
- Member, NASA Gossamer Spacecraft Program Review Panel (2001 - 2001)
- Member LLNL IGPP Director Search Committee, Lawrence Livermore National Laboratory (2001 - 2001)
- Member, University of California Observatories Infrared Working Group (1995 - 2002)
- Member, American Astronomical Society
- Referee, Optics Express
- Referee, Applied Optics
- Referee, Ap. J. Letters
- Referee, PASP
- Referee, Ap.J
- Referee, JOSA A
- Member, AAS Division of Planetary Sciences

- Referee, A&A

## PROFESSIONAL EDUCATION

- B.Sc., Trinity College, University of Toronto, Ontario, Canada , Physics (1988)
- Ph.D., University of California, Los Angeles , Astronomy (1994)

## Teaching

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### COURSES

#### 2019-20

- Modern Astrophysics: PHYSICS 360 (Win)
- Stars and Planets in a Habitable Universe: PHYSICS 15 (Aut)

#### 2018-19

- Introduction to Observational Astrophysics: PHYSICS 100 (Spr)
- Stars and Planets in a Habitable Universe: PHYSICS 15 (Aut)

#### 2017-18

- Introduction to Stellar and Galactic Astrophysics: PHYSICS 160, PHYSICS 260 (Win)
- Stars and Planets in a Habitable Universe: PHYSICS 15 (Aut)

#### 2016-17

- Introduction to Stellar and Galactic Astrophysics: PHYSICS 160, PHYSICS 260 (Win)
- Stars and Planets in a Habitable Universe: PHYSICS 15 (Aut)

## STANFORD ADVISEES

### Doctoral Dissertation Reader (AC)

Claire Hébert, Adam Snyder, Michael Taylor

### Orals Chair

Josh Sullivan

### Postdoctoral Faculty Sponsor

Lea Hirsch

### Doctoral Dissertation Advisor (AC)

Alexander Madurowicz

## Publications

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### PUBLICATIONS

- **The Degree of Alignment between Circumbinary Disks and Their Binary Hosts** *ASTROPHYSICAL JOURNAL*  
Czekala, I., Chiang, E., Andrews, S. M., Jensen, E. N., Torres, G., Wilner, D. J., Stassun, K. G., Macintosh, B.  
2019; 883 (1)
- **Formation Design of Distributed Telescopes in Earth Orbit for Astrophysics Applications** *JOURNAL OF SPACECRAFT AND ROCKETS*  
Koenig, A. W., Macintosh, B., D'Amico, S.  
2019; 56 (5): 1462–77
- **Detecting Planets from Direct-imaging Observations Using Common Spatial Pattern Filtering** *ASTRONOMICAL JOURNAL*  
Shapiro, J., Savransky, D., Ruffio, J., Ranganathan, N., Macintosh, B.

2019; 158 (3)

- **An Exo-Kuiper Belt with an Extended Halo around HD 191089 in Scattered Light** *ASTROPHYSICAL JOURNAL*  
Ren, B., Choquet, E., Perrin, M. D., Duchene, G., Debes, J. H., Pueyo, L., Rice, M., Chen, C., Schneider, G., Esposito, T. M., Poteet, C. A., Wang, J. J., Ammons, et al  
2019; 882 (1)
- **TESS Hunt for Young and Maturing Exoplanets (THYME): A Planet in the 45Myr Tucana-Horologium Association** *ASTROPHYSICAL JOURNAL LETTERS*  
Newton, E. R., Mann, A. W., Tofflemire, B. M., Pearce, L., Rizzuto, A. C., Vanderburg, A., Martinez, R. A., Wang, J. J., Ruffio, J., Kraus, A. L., Johnson, M. C., Thao, P., Wood, et al  
2019; 880 (1)
- **The Gemini Planet Imager Exoplanet Survey: Giant Planet and Brown Dwarf Demographics from 10 to 100 au** *ASTRONOMICAL JOURNAL*  
Nielsen, E. L., De Rosa, R. J., Macintosh, B., Wang, J. J., Ruffio, J., Chiang, E., Marley, M. S., Saumon, D., Savransky, D., Ammons, S., Bailey, V. P., Barman, T., Blain, et al  
2019; 158 (1)
- **Performance of the Gemini Planet Imager Non-redundant Mask and Spectroscopy of Two Close-separation Binaries: HR 2690 and HD 142527** *ASTRONOMICAL JOURNAL*  
Greenbaum, A. Z., Cheetham, A., Sivaramakrishnan, A., Rantakyro, F. T., Duchene, G., Tuthill, P., De Rosa, R. J., Oppenheimer, R., Macintosh, B., Ammons, S., Bailey, V. P., Barman, T., Bulger, et al  
2019; 157 (6)
- **Dynamical Constraints on the HR 8799 Planets with GPI** *ASTRONOMICAL JOURNAL*  
Wang, J. J., Graham, J. R., Dawson, R., Fabrycky, D., De Rosa, R. J., Pueyo, L., Konopacky, Q., Macintosh, B., Marois, C., Chiang, E., Ammons, S., Arriaga, P., Bailey, et al  
2018; 156 (5)
- **A Bayesian Framework for Exoplanet Direct Detection and Non-detection** *ASTRONOMICAL JOURNAL*  
Ruffio, J., Mawet, D., Czekala, I., Macintosh, B., De Rosa, R. J., Ruane, G., Bottom, M., Pueyo, L., Wang, J. J., Hirsch, L., Zhu, Z., Nielsen, E. L.  
2018; 156 (5)
- **Color Classification of Extrasolar Giant Planets: Prospects and Cautions** *ASTRONOMICAL JOURNAL*  
Batalha, N. E., Smith, A. W., Lewis, N. K., Marley, M. S., Fortney, J. J., Macintosh, B.  
2018; 156 (4)
- **Direct Imaging of the HD 35841 Debris Disk: A Polarized Dust Ring from Gemini Planet Imager and an Outer Halo from HST/STIS** *ASTRONOMICAL JOURNAL*  
Esposito, T. M., Duchene, G., Kalasi, P., Rice, M., Choquet, E., Ren, B., Perrin, M. D., Chen, C. H., Arriaga, P., Chiang, E., Nielsen, E. L., Graham, J. R., Wang, et al  
2018; 156 (2)
- **GPI Spectra of HR 8799 c, d, and e from 1.5 to 2.4  $\mu$  m with KLIP Forward Modeling** *ASTRONOMICAL JOURNAL*  
Greenbau, A. Z., Puey, L., Ruffio, J., Wang, J. J., De Rosa, R. J., Aguilar, J., Rameau, J., Barman, T., Marois, C., Marley, M. S., Konopacky, Q., Rajan, A., Macintosh, et al  
2018; 155 (6)
- **Characterizing Earth Analogs in Reflected Light: Atmospheric Retrieval Studies for Future Space Telescopes** *ASTRONOMICAL JOURNAL*  
Feng, Y., Robinson, T. D., Fortney, J. J., Lupu, R. E., Marley, M. S., Lewis, N. K., Macintosh, B., Line, M. R.  
2018; 155 (5)
- **Automated data processing architecture for the Gemini Planet Imager Exoplanet Survey** *JOURNAL OF ASTRONOMICAL TELESCOPES INSTRUMENTS AND SYSTEMS*  
Wang, J. J., Perrin, M. D., Savransky, D., Arriaga, P., Chilcote, J. K., De Rosa, R. J., Millar-Blanchaer, M. A., Marois, C., Rameau, J., Wolff, S. G., Shapiro, J., Ruffio, J., Maire, et al  
2018; 4 (1)
- **Moving the Gemini planet imager to Gemini North: expectations and challenges**  
Rantakyro, F. T., Bailey, V. P., Quiroz, C., Chinn, B., Macintosh, B. A., Tallis, M., Miller, B. W., Hayward, T., Poyneer, L., Chilcote, J., Norton, A., Morrison, C., Evans, et al  
SPIE-INT SOC OPTICAL ENGINEERING.2018

- **Air, Telescope, and Instrument Temperature Effects on the Gemini Planet Imager's Image Quality**  
Tallis, M., Bailey, V. P., Macintosh, B., Chilcote, J. K., Poyneer, L. A., Ruffio, J., Hayward, T. L., Savransky, D., GPI Team, Close, L. M., Schreiber, L., Schmidt, D.  
SPIE-INT SOC OPTICAL ENGINEERING.2018
- **Upgrading the Gemini Planet Imager: GPI 2.0**  
Chilcote, J. K., Bailey, V. P., De Rosa, R., Macintosh, B., Nielsen, E., Norton, A., Millar-Blanchaer, M. A., Graham, J., Marois, C., Pueyo, L., Rameau, J., Savransky, D., Veran, et al  
SPIE-INT SOC OPTICAL ENGINEERING.2018
- **Application of phase diversity to estimate the non common path aberrations in the Gemini Planet Imager: results from simulation and real data**  
Lamb, M., Norton, A., Macintosh, B., Correia, C., Veran, J., Marois, C., Sivanandam, S., Close, L. M., Schreiber, L., Schmidt, D.  
SPIE-INT SOC OPTICAL ENGINEERING.2018
- **Characterization of lemniscate atmospheric aberrations in Gemini Planet Imager data**  
Madurowicz, A., Macintosh, B. A., Ruffio, J., Chilcote, J., Bailey, V. P., Poyneer, L., Nielsen, E., Norton, A. P., Close, L. M., Schreiber, L., Schmidt, D.  
SPIE-INT SOC OPTICAL ENGINEERING.2018
- **The Gemini Planet Imager: Looking back over five years and forward to the future**  
Macintosh, B., Chilcote, J. K., Bailey, V. P., De Rosa, R., Nielsen, E., Norton, A., Poyneer, L., Wang, J., Ruffio, J. B., Graham, J. R., Marois, C., Savransky, D., Veran, et al  
SPIE-INT SOC OPTICAL ENGINEERING.2018
- **Lessons for WFIRST CGI from ground-based high-contrast systems**  
Bailey, V. P., Bottom, M., Cady, E., Cantalloube, F., de Boer, J., Groff, T., Krist, J., Millar-Blanchaer, M. A., Vigan, A., Chilcote, J., Choquet, E., De Rosa, R. J., Girard, et al  
SPIE-INT SOC OPTICAL ENGINEERING.2018
- **Characterization of atmospheric turbulence for the Large Synoptic Survey Telescope**  
Hebert, C., Macintosh, B., Burchat, P. R., Marshall, H. K., Spyromilio, J.  
SPIE-INT SOC OPTICAL ENGINEERING.2018
- **Two-Stage Attitude Control for Direct Imaging of Exoplanets with a CubeSat Telescope**  
Beierle, C., Norton, A., Macintosh, B., D'Amico, S., Lystrup, M., MacEwen, H. A., Fazio, G. G.  
SPIE-INT SOC OPTICAL ENGINEERING.2018
- **WFIRST Coronagraph Technology Requirements: Status Update and Systems Engineering Approach**  
Douglas, E. S., Carlton, A. K., Cahoy, K. L., Kasdin, N., Turnbull, M., Macintosh, B., Angeli, G. Z., Dierickx, P.  
SPIE-INT SOC OPTICAL ENGINEERING.2018
- **Individual, Model-independent Masses of the Closest Known Brown Dwarf Binary to the Sun** *ASTROPHYSICAL JOURNAL*  
Garcia, E., Ammons, S., Salama, M., Crossfield, I., Bendek, E., Chilcote, J., Garrel, V., Graham, J. R., Kalas, P., Konopacky, Q., Lu, J. R., Macintosh, B., Marin, et al  
2017; 846 (2)
- **Optimization of pyKLIP's forward model matched filter for the GPI Exoplanet Survey**  
Ruffio, J., Macintosh, B., Wang, J. J., Pueyo, L., GPIES Team, Shaklan, S.  
SPIE-INT SOC OPTICAL ENGINEERING.2017
- **Planet signal extraction from direct imaging using common spatial pattern filtering**  
Shapiro, J., Ranganathan, N., Savransky, D., Ruffio, J., Macintosh, B., GPIES Team, Shaklan, S.  
SPIE-INT SOC OPTICAL ENGINEERING.2017
- **The automated data processing architecture for the GPI Exoplanet Survey**  
Wang, J. J., Perrin, M. D., Savransky, D., Arriaga, P., Chilcote, J. K., De Rosa, R. J., Millar-Blanchaer, M. A., Marois, C., Rameau, J., Wolff, S. G., Shapiro, J., Ruffio, J., Graham, et al  
SPIE-INT SOC OPTICAL ENGINEERING.2017
- **High Contrast Observations of Circumstellar Disks with the Gemini Planet Imager's Polarimetry Mode**  
Millar-Blanchaer, M. A., Esposito, T. M., Stahl, K., Fitzgerald, M. P., Perrin, M. D., Kalas, P., Macintosh, B., Graham, J. R., GPIES Collaboration, Shaw, J. A., Snik, F.

SPIE-INT SOC OPTICAL ENGINEERING.2017

- **BRINGING "THE MOTH" TO LIGHT: A PLANET-SCULPTING SCENARIO FOR THE HD 61005 DEBRIS DISK** *ASTRONOMICAL JOURNAL*  
Esposito, T. M., Fitzgerald, M. P., Graham, J. R., Kalas, P., Lee, E. J., Chiang, E., Duchene, G., Wang, J., Millar-Blanchaer, M. A., Nielsen, E., Ammons, S. M., Bruzzone, S., De Rosa, et al  
2016; 152 (4)
- **The International Deep Planet Survey II. The frequency of directly imaged giant exoplanets with stellar mass** *ASTRONOMY & ASTROPHYSICS*  
Galicher, R., Marois, C., Macintosh, B., Zuckerman, B., Barman, T., Konopacky, Q., Song, I., Patience, J., LaFreniere, D., Doyon, R., Nielsen, E. L.  
2016; 594
- **DISCOVERY OF A SUBSTELLAR COMPANION TO THE NEARBY DEBRIS DISK HOST HR 2562** *ASTROPHYSICAL JOURNAL LETTERS*  
Konopacky, Q. M., Rameau, J., Duchene, G., Filippazzo, J. C., Godfrey, P. A., Marois, C., Nielsen, E. L., Pueyo, L., Rafikov, R. R., Rice, E. L., Wang, J. J., Ammons, S. M., Bailey, et al  
2016; 829 (1)
- **ASTROMETRIC MONITORING OF THE HR 8799 PLANETS: ORBIT CONSTRAINTS FROM SELF-CONSISTENT MEASUREMENTS** *ASTRONOMICAL JOURNAL*  
Konopacky, Q. M., Marois, C., Macintosh, B. A., Galicher, R., Barman, T. S., Metchev, S. A., Zuckerman, B.  
2016; 152 (2)
- **THE PDS 66 CIRCUMSTELLAR DISK AS SEEN IN POLARIZED LIGHT WITH THE GEMINI PLANET IMAGER** *ASTROPHYSICAL JOURNAL LETTERS*  
Wolff, S. G., Perrin, M., Millar-Blanchaer, M. A., Nielsen, E. L., Wang, J., Cardwell, A., Chilcote, J., Dong, R., Draper, Z. H., Duchene, G., Fitzgerald, M. P., Goodsell, S. J., Grady, et al  
2016; 818 (1)
- **Performance of the Gemini Planet Imager's adaptive optics system** *APPLIED OPTICS*  
Poyneer, L. A., Palmer, D. W., Macintosh, B., Savransky, D., Sadakuni, N., Thomas, S., Veran, J., Follette, K. B., Greenbaum, A. Z., Ammons, S. M., Bailey, V. P., Bauman, B., Cardwell, et al  
2016; 55 (2): 323-340
- **Science yield estimate with the Wide-Field Infrared Survey Telescope coronagraph** *JOURNAL OF ASTRONOMICAL TELESCOPES INSTRUMENTS AND SYSTEMS*  
Traub, W. A., Breckinridge, J., Greene, T. P., Guyon, O., Kasdin, N. J., Macintosh, B.  
2016; 2 (1)
- **Accreting protoplanets in the LkCa 15 transition disk.** *Nature*  
Sallum, S., Follette, K. B., Eisner, J. A., Close, L. M., Hinz, P., Kratter, K., MALES, J., Skemer, A., Macintosh, B., Tuthill, P., Bailey, V., Defrère, D., Morzinski, et al  
2015; 527 (7578): 342-344
- **Discovery and spectroscopy of the young jovian planet 51 Eri b with the Gemini Planet Imager.** *Science*  
Macintosh, B., Graham, J. R., Barman, T., De Rosa, R. J., Konopacky, Q., Marley, M. S., Marois, C., Nielsen, E. L., Pueyo, L., Rajan, A., Rameau, J., Saumon, D., Wang, et al  
2015; 350 (6256): 64-67
- **beta PICTORIS' INNER DISK IN POLARIZED LIGHT AND NEW ORBITAL PARAMETERS FOR beta PICTORIS b** *ASTROPHYSICAL JOURNAL*  
Millar-Blanchaer, M. A., Graham, J. R., Pueyo, L., Kalas, P., Dawson, R. I., Wang, J., Perrin, M. D., Moon, D., Macintosh, B., Ammons, S. M., Barman, T., Cardwell, A., Chen, et al  
2015; 811 (1)
- **CHARACTERIZING THE ATMOSPHERES OF THE HR8799 PLANETS WITH HST/WFC3** *ASTROPHYSICAL JOURNAL LETTERS*  
Rajan, A., Barman, T., Soummer, R., Hagan, J. B., Patience, J., Pueyo, L., Choquet, E., Konopacky, Q., Macintosh, B., Marois, C.  
2015; 809 (2)
- **SIMULTANEOUS DETECTION OF WATER, METHANE, AND CARBON MONOXIDE IN THE ATMOSPHERE OF EXOPLANET HR 8799 b** *ASTROPHYSICAL JOURNAL*  
Barman, T. S., Konopacky, Q. M., Macintosh, B., Marois, C.  
2015; 804 (1)

- **SCATTERED LIGHT FROM DUST IN THE CAVITY OF THE V4046 Sgr TRANSITION DISK** *ASTROPHYSICAL JOURNAL LETTERS*  
Rapson, V. A., Kastner, J. H., Andrews, S. M., Hines, D. C., Macintosh, B., Millar-Blanchaer, M., Tamura, M.  
2015; 803 (1)
- **POLARIMETRY WITH THE GEMINI PLANET IMAGER: METHODS, PERFORMANCE AT FIRST LIGHT, AND THE CIRCUMSTELLAR RING AROUND HR 4796A** *ASTROPHYSICAL JOURNAL*  
Perrin, M. D., Duchene, G., Millar-Blanchaer, M., Fitzgerald, M. P., Graham, J. R., Wiktorowicz, S. J., Kalas, P. G., Macintosh, B., Bauman, B., Cardwell, A., Chilcote, J., De Rosa, R. J., Dillon, et al  
2015; 799 (2)
- **THE FIRST H-BAND SPECTRUM OF THE GIANT PLANET beta PICTORIS b** *ASTROPHYSICAL JOURNAL LETTERS*  
Chilcote, J., Barman, T., Fitzgerald, M. P., Graham, J. R., Larkin, J. E., Macintosh, B., Bauman, B., Burrows, A. S., Cardwell, A., De Rosa, R. J., Dillon, D., Doyon, R., Dunn, et al  
2015; 798 (1)
- **The VAST Survey - IV. A wide brown dwarf companion to the A3V star zeta Delphini** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*  
De Rosa, R. J., Patience, J., Ward-Duong, K., VIGAN, A., Marois, C., Song, I., Macintosh, B., Graham, J. R., Doyon, R., Bessell, M. S., Lai, O., MCCARTHY, D. W., Kulesa, et al  
2014; 445 (4): 3694-3705
- **GEMINI PLANET IMAGER SPECTROSCOPY OF THE HR 8799 PLANETS c AND d** *ASTROPHYSICAL JOURNAL LETTERS*  
Ingraham, P., Marley, M. S., Saumon, D., Marois, C., Macintosh, B., Barman, T., Bauman, B., Burrows, A., Chilcote, J. K., De Rosa, R. J., Dillon, D., Doyon, R., Dunn, et al  
2014; 794 (1)
- **First light of the Gemini Planet Imager** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Macintosh, B., Graham, J. R., Ingraham, P., Konopacky, Q., Marois, C., Perrin, M., Poyneer, L., Bauman, B., Barman, T., Burrows, A. S., Cardwell, A., Chilcote, J., De Rosa, et al  
2014; 111 (35): 12661-12666
- **First light of the Gemini Planet imager.** *Proceedings of the National Academy of Sciences of the United States of America*  
Macintosh, B., Graham, J. R., Ingraham, P., Konopacky, Q., Marois, C., Perrin, M., Poyneer, L., Bauman, B., Barman, T., Burrows, A. S., Cardwell, A., Chilcote, J., De Rosa, et al  
2014; 111 (35): 12661-12666
- **RESOLVED IMAGING OF THE HR 8799 DEBRIS DISK WITH HERSCHEL** *ASTROPHYSICAL JOURNAL*  
Matthews, B., Kennedy, G., Sibthorpe, B., Booth, M., Wyatt, M., Broekhoven-Fiene, H., Macintosh, B., Marois, C.  
2014; 780 (1)
- **MEMS and the direct detection of exoplanets** *Conference on MEMS Adaptive Optics VIII*  
Thomas, S. J., Macintosh, B., Belikov, R.  
SPIE-INT SOC OPTICAL ENGINEERING.2014
- **Gemini planet imager integration to the Gemini South telescope software environment** *Conference on Observatory Operations - Strategies, Processes, and Systems V*  
Rantakyro, F. T., Cardwell, A., Chilcote, J., Dunn, J., Goodsell, S., Hibon, P., Macintosh, B., Quiroz, C., Perrin, M. D., Sadakuni, N., Saddlemyer, L., Savransky, D., Serio, et al  
SPIE-INT SOC OPTICAL ENGINEERING.2014
- **The VAST Survey - III. The multiplicity of A-type stars within 75 pc** *MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY*  
De Rosa, R. J., Patience, J., Wilson, P. A., Schneider, A., Wiktorowicz, S. J., VIGAN, A., Marois, C., Song, I., Macintosh, B., Graham, J. R., Doyon, R., Bessell, M. S., Thomas, et al  
2014; 437 (2): 1216-1240
- **The adaptive x-ray optic project at the Lawrence Livermore National Laboratory** *17th Pan-American Synchrotron Radiation Instrumentation Conference (SRI)*  
Pardini, T., Poyneer, L. A., MCCARVILLE, T. J., Macintosh, B., Bauman, B., Pivavaroff, M. J.  
IOP PUBLISHING LTD.2014
- **FOMALHAUT b: INDEPENDENT ANALYSIS OF THE HUBBLE SPACE TELESCOPE PUBLIC ARCHIVE DATA** *ASTROPHYSICAL JOURNAL*  
Galicher, R., Marois, C., Zuckerman, B., Macintosh, B.

2013; 769 (1)

- **Computer vision applications for coronagraphic optical alignment and image processing** *APPLIED OPTICS*  
Savransky, D., Thomas, S. J., Poyneer, L. A., Macintosh, B. A.  
2013; 52 (14): 3394-3403
- **Detection of Carbon Monoxide and Water Absorption Lines in an Exoplanet Atmosphere** *SCIENCE*  
Konopacky, Q. M., Barman, T. S., Macintosh, B. A., Marois, C.  
2013; 339 (6126): 1398-1401
- **High-contrast imager for Complex Aperture Telescopes (HiCAT): 1. Testbed design** *Conference on Techniques and Instrumentation for Detection of Exoplanets VI*  
N'Diaye, M., Choquet, E., Pueyo, L., Elliot, E., Perrin, M. D., Wallace, J. K., Groff, T., Carlotti, A., Mawet, D., Sheckells, M., Shaklan, S., Macintosh, B., Kasdin, et al  
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