

Curriculum Vitae
Nicholas J. McConnell

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Education

Ph.D. in Astrophysics, University of California, Berkeley 2012
Thesis: “Black Hole Masses in Nearby Brightest Cluster Galaxies”
Advisors: Chung-Pei Ma & James R. Graham
M.A. in Astrophysics, University of California, Berkeley 2008
B.A. in Astronomy and Physics, *summa cum laude*, Boston University 2006

Research Experience

National Research Council Canada, Herzberg Astronomy and Astrophysics: 2015-present
Plaskett Postdoctoral Fellow

I investigate the growth of the most massive galaxies and their supermassive black holes via spectroscopic measurements of stellar dynamics and populations in giant elliptical galaxies. I am a co-PI of the MASSIVE galaxy survey and lead independent projects to assess galaxies’ chemical enrichment and stellar initial mass function.

Institute for Astronomy, University of Hawaii, Manoa: 2012-2015
Beatrice Watson Parrent Postdoctoral Fellow

I characterized and critically examined widely used scaling relations between galaxies and supermassive black holes and initiated a campaign to measure black hole masses in over 30 nearby galaxies. I helped initiate the MASSIVE galaxy survey and led the survey’s integral-field spectroscopic and near-infrared imaging campaigns.

University of California, Berkeley: graduate student researcher 2006-2012

I used integral-field spectroscopic data to measure stellar kinematics in brightest cluster galaxies. I ran orbit superposition models to determine the galaxies’ internal stellar dynamics, central black hole masses, and dark matter halo profiles.

Boston University Center for Space Physics: research assistant 2004-2006

I simulated performance of a fast steering mirror system and prepared electronic hardware for deployment on a sub-orbital rocket mission.

Teaching Experience

Institute for Scientist and Engineer Educators (ISEE) Inquiry Institute – 2014-2015
staff instructor

ISEE Design Institute – staff facilitator and design team consultant 2013-2015

Hawaii Student/Teacher Astronomy Research (HI STAR) – mentor and lecturer 2014

Community in the Classroom (Berkeley and Oakland elementary schools), 2011-2012
Solar System activity – designer and visiting instructor

Teaching Experience, continued

UC Santa Cruz, MARC/MBRS Summer Program, Fluids inquiry activity – design team leader and co-instructor	2010
Hartnell College, AST 1L: Introductory Astronomy Laboratory, Transiting Planets inquiry activity – design team leader and co-instructor	2009
Maui Community College, ETRO 102: Instrumentation Spectrometer Design activity – co-instructor	2008
UC Berkeley, AY C10: Introduction to General Astronomy, Head Graduate Student Instructor (GSI)	2007
UC Berkeley, AY C12: The Planets, GSI	2007
UC Berkeley, AY C10, GSI	2006
The Princeton Review, MCAT Physics, instructor	2005-2006

Mentoring Experience

I have worked closely with Ryan Janish, a third-year graduate student at UC Berkeley (advisor Chung-Pei Ma). Ryan is leading our team's effort to measure wide-field stellar kinematics in the MASSIVE sample of early-type galaxies.	2012-present
I worked with high-school student Stephen Chen to revise stellar orbit models of galaxies and determine whether a gradient in stellar mass-to-light ratio could bias black hole mass measurements. Stephen was second author on our publication in ApJ Letters.	2012-2013
I mentored an eighth-grade student, Gearld Canaday, for the Honolulu District science fair. The research project focused on classifying galaxies and calculating the fraction of galaxy collisions in different environments, using data from the Sloan Digital Sky Survey.	2014
I was a peer mentor for two astronomy graduate students at UC Berkeley, addressing concerns about academic requirements, initial research projects, and communication with faculty advisors.	2008-2012
I supervised high-school student Michael Reed in designing a web page to compile black hole mass measurements and host galaxy properties.	2012

Observing Experience

W. M. Keck Observatory (OSIRIS, NIRC2, LRIS, DEIMOS, LGS-AO)	18 nights (semesters 2008A-2015A)
Gemini Observatory (NIFS, GMOS-N, GMOS-S, LGS-AO)	131 hr (semesters 2010B-2015B)
McDonald Observatory (Mitchell Spectrograph)	29 nights (trimesters 2011B-2015B)
UKIRT (WFCAM)	58 hr (semesters 2014A-2015A)
UH 2.2m (Tek, WFGS2)	4 nights (semesters 2014A-2015A)
Lick Observatory (IRCAL, LGS-AO)	18 nights (semesters 2007B-2009A)

In addition to telescope time secured through the University of California and the University of Hawaii, the observing time above includes 13 successful PI proposals to NOAO, CanTAC, and McDonald Observatory.

Refereed Publications

“Radial Trends in IMF-Sensitive Absorption Features in Two Early-Type Galaxies: Evidence for Abundance-Driven Gradients”

Nicholas J. McConnell, Jessica R. Lu, & Andrew W. Mann. 2015, submitted to ApJ.

“The Effect of Spatial Gradients in Stellar Mass-to-Light Ratio on Black Hole Mass Measurements”

Nicholas J. McConnell, Shi-Fan Stephen Chen, Chung-Pei Ma, Jenny E. Greene, Tod R. Lauer & Karl Gebhardt. 2013, ApJ, 768, L21

“Revisiting the Scaling Relations of Black Hole Masses and Host Galaxy Properties”

Nicholas J. McConnell & Chung-Pei Ma. 2013, ApJ, 764, 184

“Dynamical Measurements of Black Hole Masses in Four Brightest Cluster Galaxies at 100 Mpc”

Nicholas J. McConnell, Chung-Pei Ma, Karl Gebhardt, Jeremy D. Murphy, Tod R. Lauer, James R. Graham, Shelley A. Wright & Douglas O. Richstone. 2012, ApJ, 756, 179

“Two Ten-Billion-Solar-Mass Black Holes at the Centres of Giant Elliptical Galaxies”

Nicholas J. McConnell, Chung-Pei Ma, Karl Gebhardt, Shelley A. Wright, Jeremy D. Murphy, Tod R. Lauer, James R. Graham, & Douglas O. Richstone. 2011, Nature, 480, 215.

“The Black Hole Mass in the Brightest Cluster Galaxy NGC 6086”

Nicholas J. McConnell, Chung-Pei Ma, James R. Graham, Karl Gebhardt, Tod R. Lauer, Shelley A. Wright, & Douglas O. Richstone. 2011, ApJ, 728, 100

“A 17-Billion-Solar-Mass Black Hole at the Center of a Core Elliptical Galaxy in a Galaxy Group”

Jens Thomas, Chung-Pei Ma, **Nicholas J. McConnell**, Jenny Greene, John P. Blakeslee, and Ryan Janish. 2015, submitted to Nature.

“The MASSIVE Survey – III. Molecular Gas and a Broken Tully-Fisher Relation in the Most Massive Early-Type Galaxies”

Timothy A. Davis, Jenny E. Greene, Chung-Pei Ma, Viraj Pandya, John P. Blakeslee, **Nicholas J. McConnell**, and Jens Thomas. 2015, MNRAS in press.

“The MASSIVE Survey – II. Stellar Population Trends out to Large Radius in Massive Early-Type Galaxies”

Jenny E. Greene, Ryan Janish, Chung-Pei Ma, **Nicholas J. McConnell**, John P. Blakeslee, Jens Thomas, and Jeremy D. Murphy. 2015, ApJ, 807, 11

“The MASSIVE Survey – I. A Volume-Limited Integral-Field Spectroscopic Study of the Most Massive Early-Type Galaxies within 108 Mpc”

Chung-Pei Ma, Jenny E. Greene, **Nicholas McConnell**, Ryan Janish, John P. Blakeslee, Jens Thomas, and Jeremy D. Murphy. 2014, ApJ, 795, 158

“The VAST Survey – II. Orbital Motion Monitoring of A-Type Star Multiples”

Robert De Rosa, Jennifer Patience, Arthur Vigan, Paul Wilson, Adam Schneider, **Nicholas J. McConnell**, Sloane Wiktorowicz, Christian Marois, Inseok Song, Bruce Macintosh, James Graham, Mike Bessell, & Rene Doyon. 2012, MNRAS, 422, 2765

Refereed Publications, continued

“Long-term Evolution of the Aerosol Debris Cloud Produced by the 2009 Impact on Jupiter”

Agustin Sánchez-Lavega, Glenn S. Orton, Ricardo Hueso, Santiago Pérez-Hoyos, Leigh N. Fletcher, Enrique García-Melendo, Josep M. Gomez-Forrellad, Imke de Pater, Michael Wong, Heidi B. Hammel, Padma Yanamandra-Fisher, Amy Simon-Miller, Naiara Barrado-Izagirre, Franck Marchis, Olivier Mousis, Jose-Luis Ortiz, Jorge García-Rojas, Massimo Cecconi, John T. Clarke, Keith Noll, Santos Pedraz, Anthony Wesley, Paul Kalas, **Nicholas McConnell**, William Golisch, David Griep, Paul Sears, Eric Volquardsen, Vishnu Reddy, Mike Shara, Richard Binzel, Will Grundy, Joshua Emery, Andrew Rivkin, Cristina Thomas, David Trilling, Karen Bjorkman, Adam J. Burgasser, Humberto Campins, Takashi M. Sato, Yuichi Kasaba, Julie Ziffer, R. Mirzoyan, Michael Fitzgerald, & Hervé Bouy. 2011, *Icarus*, 214, 462

Other Publications

“Black Hole Safari: Tracking Populations and Hunting Big Game”

Nicholas J. McConnell. 2013, Proceedings of the Frank N. Bash Symposium:
New Horizons in Astronomy

“A College-level Inquiry-based Activity on Transiting Planets”

Nicholas J. McConnell, Anne M. Medling, Linda E. Strubbe, Pimol Moth, Ryan M. Montgomery, Lynne M. Raschke, Lisa Hunter, & Barbara K. Goza. 2010, *ASPC*, 436, 97

“Training the Next Generation of Astronomers”

Peter K. G. Williams, Eric Huff, Holly L. Maness, Maryam Modjaz, Kristen L. Shapiro, Jeffrey M. Silverman, Linda Strubbe, Betsey Adams, Katherine Alatalo, Kuenley Chiu, Mark Claire, Bethany Cobb, Kelle Cruz, Louis-Benoit Desroches, Melissa Enoch, Chat Hull, Hannah Jang-Condell, Casey Law, **Nicholas McConnell**, Rowin Meijerink, Stella Offner, John K. Parejko, Jonathan Pober, Klaus Pontoppidan, Dovi Poznanski, Anil Seth, Steven Stahler, Lucianne Walkowicz, Andrew A. West, Andrew Wetzel & David Whysong. 2009, *Astro2010*, Position Papers, no. 65, arXiv:0904.2571

Invited Talks

<i>Supermassive Black Holes</i> (workshop), Wadham College, Oxford, UK	March 17, 2015
Adler Planetarium, Journal Club	January 30, 2015
University of Wisconsin – Madison, Astronomy Colloquium	January 29, 2015
Northwestern University, CIERA special seminar	January 28, 2015
MPIA Heidelberg, Galaxy Coffee	July 17, 2014
ETH Zurich, galaxy seminar	July 14, 2014
Harvard/Smithsonian Center for Astrophysics, Optical/Infrared Seminar	May 7, 2014
Boston University, astronomy seminar	May 5, 2014
University of Hawaii, Institute for Astronomy Colloquium	November 6, 2013
<i>Bash Symposium: New Horizons in Astronomy</i> , Austin, TX	October 6-8, 2013
National Optical Astronomy Observatory, Friday Scientific Lunch Talk	October 4, 2013
Texas A&M University, Astrophysics Seminar	September 30, 2013
Gemini Observatory, Astronomy Seminar	January 18, 2013
<i>Black Holes by the Black Sea</i> , Istanbul, Turkey	June 25-29, 2012
Lawrence Berkeley National Laboratory, INPA Journal Club	May 4, 2012
University of California, Irvine, Astrophysics Seminar	January 17, 2012
UCLA, extragalactic journal club	November 21, 2011
Princeton University, extragalactic journal club	November 14, 2011
University of Toronto, extragalactic journal club	November 10, 2011
Yale University, Galaxy Lunch	November 9, 2011
University of Texas at Austin, Cosmos Seminar	September 28, 2011
University of California, Berkeley, Theory Lunch	April 20, 2011
Keck Observatory, astronomy seminar	May 6, 2010
University of California, Berkeley, Adaptive Optics Seminar	October 28, 2008

Contributed Talks

<i>The Stellar IMF at Low Masses</i> , Baltimore, MD	June 29-July 1, 2015
<i>Massive Galaxies and their Precursors</i> , Sydney, Australia	February 9-12, 2015
<i>American Astronomical Society Meeting 225</i> , Seattle, WA	January 5-8, 2015
<i>Keck Science Meeting</i> , Pasadena, CA	October 2-3, 2014
<i>American Astronomical Society Meeting 223</i> , Washington, DC	January 5-9, 2014
<i>American Astronomical Society Meeting 219</i> , Austin, TX	January 9-12, 2012
<i>Single and Double Black Holes in Galaxies</i> , Ann Arbor, MI	August 22-25, 2011
<i>American Astronomical Society Meeting 217</i> , Seattle, WA	January 10-13, 2011
<i>Teaching Science & Engineering Research Skills: Practices and Perspectives</i> , Santa Cruz, CA	April 3, 2009

Poster Presentations

<i>International Astronomical Union Symposium 309: Galaxies in 3D across the Universe</i> , Vienna, Austria	July 7-11, 2014
<i>Unveiling the Formation of Massive Galaxies</i> , Aspen, CO	February 2-7, 2014
<i>Early Galaxy Formation in ΛCDM Cosmology</i> , Jerusalem, Israel	January 1-10, 2013
<i>Learning from Inquiry in Practice</i> , Santa Cruz, CA	January 16-17, 2010
<i>Keck Science Meeting</i> , Pasadena, CA	September 16-17, 2009
<i>International Astronomical Union Symposium 267: Evolution of Galaxies and Central Black Holes</i> , Rio de Janeiro, Brazil	August 10-14, 2009
<i>American Astronomical Society Meeting 213</i> , Long Beach, CA	January 5-8, 2009
<i>Keck Science Meeting</i> , Santa Cruz, CA	September 18, 2008

Formal Education Training

Center for Astronomy Education Tier I workshop	2011
Institute for Scientist and Engineer Educators (ISEE), “Certificate in Teaching Innovative Laboratory Experiences”	2010
ISEE Professional Development Program, “Inquiry in Science and Engineering Learning and Teaching” workshop	2008-2010
ISEE Professional Development Program, “Re-thinking Science and Engineering Learning and Teaching” workshop	2008

Fellowships, Scholarships, and Awards

Plaskett Postdoctoral Fellowship, NRC Herzberg	2015-present
Beatrice Watson Parrent Fellowship, Institute for Astronomy, UH Manoa	2012-2015
Mary Elizabeth Uhl Prize, UC Berkeley Astronomy Department	2012
Outstanding Graduate Student Instructor Award, UC Berkeley	2007
William V. Power Graduate Award, UC Berkeley	2006
Astronomy Prize, Boston University Astronomy Department	2006
College Prize, Boston University Astronomy Department	2006
Inducted to Phi Beta Kappa honor society	2005
College of Arts and Science Scholarship, Boston University	2005-2006
University Scholarship, Boston University	2002-2006

Service

Astronomy Ally	2014-present
Co-hosted a biweekly astro-ph coffee discussion at IfA	2013-2015
Hosted a weekly extragalactic seminar at IfA	2012-2015
Participated in two working groups for IfA long-term strategic planning	2014
Served on Telescope Allocation Committee, University of Hawaii	2014A-2014B
Served as the graduate student representative on the New Building Committee (identified and addressed student concerns during the Astronomy department’s relocation on UC Berkeley’s campus)	2009-2011

Public Outreach

Speaker, MacMillan Space Centre, “Monsters in the Dark”	October 24, 2015
Judge, Hawaii State Science Fair	March 23, 2015
Speaker, HawaiiCon, “Black Holes and their Messy Habits”	September 13, 2014
Speaker, IfA Frontiers Lecture, “Monsters in the Dark”	October 29, 2013
Presenter, Hokulani Elementary School Career Day	March 13, 2013
Guest Scientist, KALX-FM Berkeley	February 17, 2012
Presenter, Oakland Unified School District Dinner with a Scientist	May 2 & 30, 2012
	June 1, 2011
Volunteer, Bay Area Science Festival	November 6, 2011
Speaker, Alameda County 4-H Science Engineering Technology Career Day	April 9, 2011
Speaker, Eastbay Astronomical Society Monthly Meeting	August 28, 2010