

David R. Rodriguez

CONTACT INFORMATION

Universidad de Chile
Camino el Observatorio 1515
Las Condes, Santiago
Chile

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Citizen of the United States of America. Hispanic (Puerto Rican) ethnicity.

RESEARCH INTERESTS

Low-mass stars, stellar associations and moving groups, brown dwarfs, binary stars, gas and dust in circumstellar disks, the Virtual Observatory (VO), data mining

EDUCATION

University of California, Los Angeles, Los Angeles, CA

Ph.D., Astronomy June 2011
Advisor: Dr. Ben Zuckerman
Thesis Topic: “A Search for Low Mass Stars and Substellar Companions and A Study of Circumbinary Gas and Dust Disks”
M.S., Astronomy April 2008
Advisor: Dr. Matt Malkan
Thesis Topic: “Emission Line Properties of Seyfert Galaxies In The 12 Micron Sample”

Florida Institute of Technology, Melbourne, FL

B.S., Space Sciences, Astronomy & Astrophysics Option May 2006
Summa cum laude

HONORS AND AWARDS

Chile Fondecyt Fellowship grant #3130520 2012–Present
Co-I in NASA Astrophysics Data Analysis Program grant NNX12AH37G 2012–2014
Co-I in NASA Astrophysics Data Analysis Program grant NNX09AC96G 2009–2011
UCLA Eugene Cota-Robles Fellowship 2006, 2008
UCLA Department of Astronomy Summer Fellowship 2007
FIT Faculty Honors Award 2006
FIT Distinguished Student Scholar 2005, 2006

RESEARCH EXPERIENCE

Universidad de Chile, Santiago, Chile

Postdoctoral Researcher, Fondecyt Fellow Oct. 2011 – Present
Currently working on expanding the GALEX young star search by incorporating WISE data and using sub-millimeter facilities, such as APEX and ALMA, to characterize nearby protoplanetary disks. This work was initially funded under a Chilean BASAL fellowship, but I am now PI of a Chilean Fondecyt fellowship as of 2012.

University of California, Los Angeles

Graduate Student Researcher May 2008 – Sept. 2011

- Discovery of a new technique to find nearby ~ 10 – 100 Myr-old stars using GALEX and optical/near-infrared data
- Search for brown dwarfs cooler than any known (i.e., the Y-type) as companions to nearby white dwarfs
- Submillimeter interferometric study of the gas and dust disk of the oldest known classical T Tauri star (V4046 Sgr, 12 Myr)
- Adaptive optics (AO) imaging of a brown dwarf $\sim 2''$ away from the Pleiades star HD 23514, one of the dustiest debris-disk stars known

David R. Rodriguez

- Search (spectroscopic and AO) and characterization of binaries in debris disk stars, particularly studying the relationship between binary separation and dust location
- AO search for binaries among DEBRIS sample stars. DEBRIS is a Herschel Key Program (PI: B. Matthews) to observe ~ 450 A–M stars at 100 and 160 μ m.
- Identification and spectroscopic follow-up of nearby, young low-mass stars found using ROSAT, Chandra, XMM, and GALEX source catalogs
- HST NICMOS polarimetry of the disk surrounding BP Psc, a first-ascent giant with a massive molecular disk

Graduate Student Researcher, with Dr. M. Malkan April 2007 – April 2008
Studied the emission lines in the optical and ultraviolet of Seyfert galaxies in the 12 micron sample.

Florida Institute of Technology, Geospace Physics Laboratory
Undergraduate Researcher, with Dr. M. Zhang August 2005 – June 2006
Created a model of a planet’s magnetosphere and its interactions with the solar wind using FLASH, an MHD code created by the University of Chicago.

University of California, Los Angeles
Undergraduate Researcher, with Drs. M. Morris & M. Rich July – Sept. 2005
Studied the stellar populations of M32 using surface photometry at ultraviolet and infrared wavelengths.

Florida Institute of Technology
Assistant Programmer, with Dr. J. Mantovani January – June 2004
Designed a C++ program to operate a student-built scanning tunneling microscope.

TEACHING AND MENTORING EXPERIENCE

Universidad de Chile, Santiago, Chile
Mentor for Walter Matias Tejada March – July 2014
Guided undergraduate researcher in the reduction and analysis of Gemini-GMOS spectroscopic data of young stars.

Mentor for Diego Paez Olate & Carolina Vidal Ruiz January 2013
Guided undergraduate researchers (every weekday for the month) in finding young stars in the Lupus and Chameleon star forming regions using UV and near-IR source catalogs.

Mentor for Mariela Celis Peña March – July 2012
Guided an undergraduate researcher in finding young stars in the Corona Australis star forming region using UV and near-IR source catalogs.

University of California, Los Angeles
Mentor for Wilhelm Weidmann & Pruthviraj Gohil November 2010 – Aug. 2011
Guided undergraduate researchers in finding nearby, young stars using X-ray and UV source catalogs.

Teaching Assistant Sept. 2007 – March 2008, July 2011
Led weekly discussion sessions for Astronomy 5, an introductory course on “Life in the Universe”.

Mentor for Viranga Perera July 2009 – May 2010
Guided undergraduate researcher in reduction and analysis of Spitzer data to search for low-mass companions.

Teaching Assistant April – June 2007
Led weekly discussion sessions for Astronomy 6, an introductory course on Cosmology.

David R. Rodriguez

Teaching Assistant

Sept. 2006 – March 2007

Led weekly laboratory sessions for Astronomy 3, an introductory course on “The Nature of the Universe”.

TECHNICAL SKILLS Python, IDL, IRAF, SQL, FORTRAN, C++; VO Tools: TOPCAT, Aladin

TELESCOPE EXPERIENCE

Optical Spectroscopy

Very Large Telescope (VLT): UVES
MPG-2.2m at La Silla Observatory: FEROS
du Pont Telescope at Las Campanas Observatory: B&C, echelle
Lick Observatory Shane 3-m, CAT: Hamilton echelle

Near-IR Spectroscopy

Infrared Telescope Facility (IRTF): SpeX
New Technology Telescope (NTT): SoFI

Near-IR Imaging

Spitzer Space Telescope: IRAC
CTIO Blanco 4-m: ISPI, NEWFIRM, DECAM
Palomar 200-in: WIRC
KPNO Mayall 4-m: FLAMINGOS
AKARI Space Telescope: IRC

Adaptive Optics Imaging

Very Large Telescope (VLT): NACO
Keck Observatory: NIRC2
Lick Observatory Shane 3-m: IRCAL
Magellan Clay 6-m: MagAO

Polarimetry

Very Large Telescope (VLT): FORS2
Hubble Space Telescope: NICMOS

Submm Radio

Atacama Large Millimeter Array (ALMA): accepted Cycle 1 & 2 programs
Atacama Pathfinder Experiment (APEX): SHFI, LABOCA
Harvard/Smithsonian Submillimeter Array (SMA) at Mauna Kea Observatory

Archival Data

Galaxy Evolution Explorer Satellite (GALEX)
Wide-Field Infrared Survey Explorer (WISE)
Two-Micron All Sky Survey (2MASS)
Chandra X-ray Observatory
XMM-Newton
Röntgen Satellite (ROSAT)

WORKSHOPS

Improving the College Introductory Astronomy and Space Science General Education Course Through Active Engagement: A Tier I (Introductory) Workshop January 2013
Center for Astronomy Education workshop; Long Beach, CA

Career Development Workshop: Mentoring Undergraduates, A Framework for Planning and Advising Projects October 2010
Workshop at the Center for Adaptive Optics Fall Retreat; Lake Arrowhead, CA

David R. Rodriguez

	<i>Extrasolar Planets and Habitability</i>	June 2010
	Week-long summer school at Universidad Internacional Menéndez Pelayo as part of the International School of Astrobiology “Josep Comas i Solà”; Santander, Spain	
	<i>Professional Development Program: Re-Thinking Science Learning & Teaching</i>	November 2007
	1-day workshop at the Center for Adaptive Optics; Santa Cruz, CA	
SERVICE	<i>IAU 314 Symposium: Young Stars and Planets Near the Sun</i>	Scheduled May 2015
	Member of the Science Organizing Committee	
	<i>CFHT Telescope Allocation Committee</i>	November 2014
	External reviewer for a telescope proposal submitted to the Canada-French-Hawaii Telescope	
	<i>Astronomía Dinámica en Latinoamérica (ADeLA)</i>	September 2014
	Member of the Local Organizing Committee	
	<i>FONDECYT Initiation Into Research Program</i>	August 2014
	External reviewer for a FONDECYT research proposal	
OUTREACH ACTIVITIES	<i>Investigador del DAS Lidera Búsqueda de Estrellas de Baja Masa</i>	November 2013
	Press feature (in Spanish) for my work on identifying low-mass stars among the nearby young moving groups.	
	<i>Easter Island Venus Transit 2012</i>	June 2012
	Organizing and helping run four days of outreach activities at the museum and schools of Easter Island culminating in observations of the transit of Venus. This was also connected to a world-wide school network in order to measure the distance to the Sun using transit time measurements.	
	<i>Descubren Enana Café Alrededor De Estrella de Las Pléyades</i>	April 2012
	Press feature (in Spanish) for my work on the brown dwarf companion to HD 23514 and my work on debris disk binary systems.	
	<i>Planetarium Shows</i>	2006 – 2011
	Presented at least 3–4 shows every year for the general public or school groups, including some shows in Spanish.	
	<i>NASA Telescope Ferrets Out Planet-Hunting Targets</i>	April 2011
	Press feature for the GALEX search for young stars.	
	<i>Explore Your Universe</i>	November 2010
	Ran Sun and Solar System outreach activities for the second annual Explore Your Universe day at UCLA. Also presented two planetarium shows.	
	<i>Chandra Finds Evidence for Stellar Cannibalism</i>	September 2010
	Press release for the Chandra X-ray Observatory detection of BP Psc.	
	<i>Explore Your Universe</i>	November 2009
	Created and ran an extrasolar planet outreach activity for the newly created Explore Your Universe day at UCLA, as well as presenting two planetarium shows (one in Spanish).	
	<i>Radio Telescope Images Reveal Planet-Forming Disk Orbiting Twin Suns</i>	June 2009
	Press release at the American Astronomical Society 214 th Meeting in Pasadena, CA.	

David R. Rodriguez

REFEREED
PUBLICATIONS

20. **D. R. Rodriguez**, G. van der Plas, J. H. Kastner, A. C. Schneider, J. K. Faherty, D. Mardones, S. Mohanty, D. Principe, 2015, *A&A*, in press. “An ALMA Survey for Disks Orbiting Low-Mass Stars in the TW Hya Association”
19. **D. R. Rodriguez**, Gaspard Duchene, Henry Tom, Grant Kennedy, Brenda Matthews, Jane Greaves, Harold Butner, 2015, *MNRAS*, 449, 3160. “Stellar Multiplicity and Debris Disks: An Unbiased Sample”
18. A. Moro-Martin, J. P. Marshall, G. Kennedy, B. Sibthorpe, B.C. Matthews, C. Eiroa, M.C. Wyatt, J.-F. Lestrade, J. Maldonado, **D. Rodriguez**, J.S. Greaves, B. Montesinos, A. Mora, M. Booth, G. Duchene, D. Wilner, J. Horner, 2015, *ApJ*, 801, 143. “Does the Presence of Planets Affect the Frequency and Properties of Extrasolar Kuiper Belts? Results from the Herschel DEBRIS and DUNES Surveys”
17. N. D. Thureau, J. S. Greaves, B. C. Matthews, G. Kennedy, N. Phillips, M. Booth, G. Duchene, J. Horner, **D. R. Rodriguez**, B. Sibthorpe, M. C. Wyatt, 2014, *MNRAS*, 445, 2558. “An unbiased study of debris discs around A-type stars with Herschel”
16. J. H. Kastner, P. Hily-Blant, **D. R. Rodriguez**, K. Punzi, T. Forveille, 2014, *ApJ*, 793, 55. “Unbiased mm-wave Line Surveys of TW Hya and V4046 Sgr: The Enhanced C₂H and CN Abundances of Evolved Protoplanetary Disks”
15. L. Smith, P. W. Lucas, R. Bunce, B. Burningham, H. R. A. Jones, R. L. Smart, N. Skrzypek, **D. R. Rodriguez**, J. Faherty, et al., 2014, *MNRAS*, 443, 2327. “High Proper Motion Objects from the UKIDSS Galactic Plane Survey”
14. B. Zuckerman, L. Vican, & **D. R. Rodriguez**, 2014, *ApJ*, 788, 102. “Accretion and OH Photodissociation at a Nearby T Tauri System in the beta Pictoris Moving Group”
13. **D. R. Rodriguez**, B. Zuckerman, J. K. Faherty, & L. Vican, 2014, *A&A*, 567, 20. “A Dusty M5 Binary in the beta Pictoris Moving Group”
12. A. R. Riedel, C. T. Finch, T. J. Henry, J. P. Subasavage, W.-C. Jao, L. Malo, **D. R. Rodriguez**, et al., 2014, *AJ*, 147, 85. “The Solar Neighborhood. XXXIII. Parallax Results from the CTIOPI 0.9m Program: Trigonometric Parallaxes of Nearby Low-Mass Active and Young Systems”
11. **D. R. Rodriguez**, B. Zuckerman, J. H. Kastner, M. Bessell, J. K. Faherty, & S. J. Murphy, 2013, *ApJ*, 774, 101. “The GALEX Nearby Young-Star Survey”
10. J.-F. Lestrade, B. C. Matthews, B. Sibthorpe, G. M. Kennedy, M. C. Wyatt, G. Bryden, J. S. Greaves, E. Thilliez, Amaya Moro-Martin, M. Booth, W. R. F. Dent, G. Duchene, P. M. Harvey, J. Horner, P. Kalas, J. J. Kavelaars, N. M. Phillips, **D. R. Rodriguez**, K. Y. L. Su, D. J. Wilner, 2012, *A&A*, 548, 86. “A DEBRIS Disk Around The Planet Hosting M-star GJ581 Spatially Resolved with Herschel”
9. J. K. Faherty, **D. R. Rodriguez**, & S. T. Miller, 2012, *Astronomy Education Review*, 11, 010203 . “The Hetu’u Global Network: Measuring the Distance to the Sun Using the June 5th/6th Transit of Venus”
8. M. Booth, G. Kennedy, B. Sibthorpe, B. C. Matthews, M. C. Wyatt, G. Duchne, J. J. Kavelaars, **D. Rodriguez**, J. S. Greaves, A. Koning, L. Vican, G. H. Rieke, K. Y. L. Su, A. Moro-Martn, & P. Kalas, 2012, *MNRAS*, 428, 1263. “Resolved Debris Discs Around A Stars in the Herschel DEBRIS Survey”

David R. Rodriguez

7. **D. R. Rodriguez**, C. Marois, B. Zuckerman, B. Macintosh, & C. Melis, 2012, ApJ, 748, 30. “A Substellar Companion to the Dusty Pleiades Star HD 23514”
6. **D. R. Rodriguez** & B. Zuckerman, 2012, ApJ, 745, 147. “Binaries Among Debris Disk Stars”
5. **D. R. Rodriguez**, B. Zuckerman, C. Melis, & I. Song, 2011, ApJ Letters, 732, 29. “The Ultra Cool Brown Dwarf Companion of WD 0806-661: Age, Mass, and Formation Mechanism”
4. **D. R. Rodriguez**, M. Bessell, B. Zuckerman, & J. H. Kastner, 2011, ApJ, 727, 62. “A New Method to Identify Nearby, Young, Low-mass Stars”
3. **D. R. Rodriguez**, J. H. Kastner, D. Wilner, & C. Qi, 2010, ApJ, 2010, 720, 1684. “Imaging the Molecular Disk Orbiting the Twin Young Suns of V4046 Sgr”
2. J. H. Kastner, R. Montez, **D. Rodriguez**, N. Grosso, B. Zuckerman, M. D. Perrin, T. Forveille, & J. R. Graham, 2010, ApJL, 719, L65. “Chandra X-ray Detection of the Enigmatic Field Star BP Psc”
1. DEBRIS Collaboration: B. Matthews, B. Sibthorpe, G. Kennedy, N. Phillips, L. Churcher, G. Duchêne, J. Greaves, J.F. Lestrade, A. Moro-Martin, M. Wyatt, P. Bastien, A. Biggs, J. Bouvier, H. Butner, B. Dent, J. Di Francesco, J. Eisloffel, J. Graham, P. Harvey, P. Hauschildt, W. Holland, J. Horner, E. Ibar, R. Ivison, D. Johnstone, P. Kalas, J. Kavelaars, **D. Rodriguez**, S. Udry, P. van der Werf, D. Wilner, B. Zuckerman, 2010, A&A, 518, L135. “Resolving debris discs in the far-infrared: Early highlights from the DEBRIS survey”

CONFERENCE PROCEEDINGS

D. R. Rodriguez, B. Zuckerman, Joel H. Kastner, Laura Vican, David Principe, Jacqueline K. Faherty, Simon J. Murphy, Mike S. Bessell, 2014, Cool Stars 18. “New Results from the GALEX Nearby Young-Star Survey”

D. R. Rodriguez, B. Zuckerman, J. H. Kastner, M. Bessell, J. K. Faherty, S. J. Murphy, & L. Vican, 2013, XIV Latin American Regional IAU Meeting. “The GALEX Nearby Young-Star Survey”

D. R. Rodriguez, B. Zuckerman, J. H. Kastner, M. Bessell, J. K. Faherty, S. J. Murphy, & L. Vican, 2013, Protostars and Planets VI (2013prpl.conf2K096R). “The GALEX Nearby Young-Star Survey”

J. H. Kastner, K. Punzi, **D. R. Rodriguez**; G. G. Sacco, P. Hily-Blant, T. Forveille, B. Zuckerman, 2013, Protostars and Planets VI (2013prpl.conf2S022K) “Molecular Line Surveys of Nearby T Tauri Stars: Late-time Chemistry of Protoplanetary Disks”

A. J. Burgasser, J. K. Faherty, S. Schmidt, A. A. West, M. R. Zapatero Osorio, J. S. Pineda, B. Burningham, C. Nicholls, R. Sanderson, E. Shkolnik, **D. Rodriguez**, A. Riedel, V. Joergens, 2013, Cool Stars 17 (Astronomische Nachrichten, 334, 93). “The kinematics of very low mass dwarfs: Splinter session summary”

D. R. Rodriguez & B. Zuckerman, 2008, New Light on Young Stars: Spitzer’s View of Circumstellar Disks (<http://www.ipac.caltech.edu/spitzer2008/posters/DavidRodriguez.html>). “Binaries Among Debris Disk Stars: IRAS vs Spitzer”

TALKS AND POSTERS

Poster: *A Molecular Disk Survey of Low-Mass Stars in the TW Hya Association*, IAU Symposium 314: Young Stars and Planets Near the Sun; Atlanta, GA, May 2015

Poster: *Stellar Multiplicity in the DEBRIS disk sample*, American Astronomical Society 225th Meeting; #349.24; Seattle, WA, January 2015

David R. Rodriguez

Talk: *Debris disks around binary stars*, MAD Workshop: Protoplanetary disks and the planets they form; Santiago, Chile, November 2014

Poster: *Identification of Young Moving Group Stars*, ADeLA 2014 Meeting; Santiago, Chile, September 2014

Poster: *New Results from the GALEX Nearby Young-Star Survey*, Cool Stars 18 Workshop; Flagstaff, AZ, June 2014

Talk: *The GALEX Nearby Young-Star Survey*, American Astronomical Society 223rd Meeting; #334.06; Washington, DC, January 2014

Poster: *The GALEX Nearby Young-Star Survey*, Protostars & Planets VI; Heidelberg, Germany, July 2013

Talk: *The GALEX Nearby Young-Star Survey (GALNYSS): Finding Young Stars Right in our Backyard*, CalTech; Pasadena, CA, January 2013

Talk: *The GALEX Nearby Young-Star Survey (GALNYSS): Finding Young Stars Right in our Backyard*, UCLA; Los Angeles, CA, January 2013

Poster: *The Hetu'u Global Network: Measuring the Distance to the Sun with the Transit of Venus*, American Astronomical Society 221th Meeting; #246.09; Long Beach, CA, January 2013

Poster: *First Results from the GALEX Nearby Young Star Survey*, American Astronomical Society 221th Meeting; #158.12; Long Beach, CA, January 2013

Talk & Poster: *Identifying Nearby, Young, Low-Mass Stars with the GALEX and WISE Catalogs*, Cool Stars 17 Workshop; Barcelona, Spain, June 2012

Poster: *Stellar Multiplicity & Debris Disks: Planet Formation in Binary Systems*, ESO Conference: Observing Planetary Systems II; Santiago, Chile, March 2012

Talk: *Identifying Nearby, Young, Low-Mass Stars*, Florida Institute of Technology; Melbourne, FL, February 2012

Talk: *Identifying Nearby, Young, Low-Mass Stars*, ESO-Vitacura; Santiago, Chile, January 2012

Talk: *Imaging the Molecular Disk Orbiting the Twin Young Suns of V4046 Sgr*, ESO-Vitacura; Santiago, Chile, January 2012

Poster: *Debris Disks Among Binary Stars*, American Astronomical Society 219th Meeting; #344.14, Austin, TX, January 2012

Talk: *Identifying & Studying Nearby, Young, Low-Mass Stars*, American Museum of Natural History; New York City, NY, December 2011

Talk: *Identifying & Studying Nearby, Young, Low-Mass Stars*, Universidad de Chile, Departamento de Astronomia; Santiago, Chile, December 2011

Talk: *Gas and Dust in Circumbinary Disks: Planet Formation in Binary Systems*, ALMA-Vitacura; Santiago, Chile, November 2011

Dissertation Talk: *A Search for Low Mass Stars and Substellar Companions and A Study of Cir-*

David R. Rodriguez

cuminary Gas and Dust Disks, American Astronomical Society 217th Meeting; #131.06, Seattle, WA, January 2011

Talk: *Identifying Nearby, Young, Low-Mass Stars Using GALEX*, UCLA Journal Club, November 2010

Talk: *An AO Search for Binaries Among Debris Disk Systems*, CfAO Fall Retreat, October 2010

Talk: *Identifying Nearby, Young, Low-Mass Stars Using GALEX*, CTIO; La Serena, Chile, September 2010

Talk: *Imaging the Molecular Disk Orbiting the Twin Suns of V4046 Sgr*, followed by a brief demonstration of the TOPCAT and Aladin VO tools, Rochester Institute of Technology; Rochester, NY, July 2009

Talk: *Imaging the Molecular Disk Orbiting the Twin Suns of V4046 Sgr*, American Astronomical Society 214th Meeting; #315.04, Pasadena, CA, June 2009

Talk: *Binaries Among Debris Disks: Does the existence of a debris disk depend on the multiplicity of the star it orbits?*, CTIO; La Serena, Chile, March 2009

Poster: *HST NICMOS and WFPC2 Imaging of BP Piscium*, American Astronomical Society 213th Meeting; #409.02, Long Beach, CA, January 2009

Poster: *Binaries Among Debris Disk Stars: IRAS vs Spitzer*, Spitzer Conference: New Light on Young Stars; Pasadena, CA, October 2008