

Ricardo Rodrigo Muñoz

Address:	University of Virginia Department of Astronomy P.O. Box 400325, UVa Charlottesville, VA 22904	Birthdate	4 November 1976
		Email	rrm8f@virginia.edu
		Phone	1-434-924-7935
		Fax	1-434-924-3104

Degrees

May 2008 (Expected) Ph.D. in Astronomy, University of Virginia, VA
“*Mapping Galactic Halo and dSph Substructure with Giant Stars*”
Advisor: Dr. Steven R. Majewski

May 2004 M.S. in Astronomy, University of Virginia, VA
“*Exploring the Extended Structure of the Carina dSph*”

May 2000 B.S. Chemical Engineering
University of Concepción, Concepción, Chile

Research Experience

2002– **Research Assistant**, University of Virginia – Advisor: Dr. Steven R. Majewski
Galactic Structure & Dynamics, Star Clusters, Dwarf Galaxies, Tidal Streams,
Multi-fiber Spectroscopy, Photometry

2001 Summer job in Astronomy. La Silla Observatory, European Southern Observatory, Santiago,
Chile – Advisor: Dr. Nancy Ageorges

1999–2001 **Observer** for the Space Interferometry Mission (SIM) southern project
Advisor: Dr. Douglas Geisler and Dr. Wolfgang Gieren.

Awards and Honors

2007 Award for Excellence in Scholarship in the Sciences, Awarded by the University of Virginia.

2000 Universidad de Concepción Award, in the career of Chemical Engineering
as the Best Student of the 2000 Class. Awarded by the University of Concepción.

2000 Facultad de Ingeniería Award, Chemical Engineering,
Awarded by the Engineering Department.

Grants and Fellowships

2007 Farrar Graduate Fellowship, Astronomy Department, U. of Virginia

2006 Robert J. Huskey Travel Fellowship, U. of Virginia

2006 International Travel Grant, American Astronomical Society

2005 Robert J. Huskey Travel Fellowship, U. of Virginia

2004 Robert J. Huskey Travel Fellowship, U. of Virginia

2003–2006 F. H. Levinson Graduate Fellowship, U. of Virginia

2002–2004 Hamilton Graduate Fellowship, School of Arts & Sciences, U. of Virginia

2002–2004 Presidential Fellowship, U. of Virginia

2002 Conicyt Doctoral Fellowship, Chilean Committee for Science and Technology

2001–2002 Physics Department Graduate Fellowship, Physics Department, U. of Concepción, Chile

2000–2001 Graduate School Fellowship, U. of Concepción, Chile

Teaching Experience

- 2006 (Spring) Teaching Assistant,
Astronomy 121/124 (The Sky & Solar System/Stars, Galaxies & the Universe),
University of Virginia
- 2000–2001 Instructor for “General Physics for Engineers” course, Physics Department,
University of Concepción, Chile
- 2000 (Fall) Instructor, Colegio Concepción (High school level), Concepción, Chile
- 1996–2000 Teaching Assistant, Several Courses, Chemical Engineering Department,
University of Concepción, Chile

Observing Experience

- 19 nights: Swope 1-m telescope CCD imaging
- 7 nights: Swope 1-m telescope MODSpec spectroscopy
- 12 nights: Du Pont 2.5-m telescope CCD imaging
- 6 nights: Du Pont 2.5-m telescope MODSpec spectroscopy
- 2 nights: 2.2m ESO telescope WFI imaging
- 4 nights: KPNO 4-m telescope MOSAIC imaging
- 6 nights: WIYN 3.5-m telescope MINIMO imaging
- 21 nights: WIYN 3.5-m telescope HYDRA spectroscopy
- 25 nights: Blanco 4-m telescope HYDRA spectroscopy
- 5 nights: CTIO 1.5-m telescope RCSpec spectroscopy
- 1 night: 3.5m NTT-ESO telescope CCD imaging
- 3 night: Magellan 6.5m telescope MIKE spectroscopy

Employment and Affiliation

- 2000 (Summer) Telescope Assistant, 2.2m telescope, La Silla Observatory, Chile
- 1999 (Summer) Telescope Assistant, 2.2m telescope, La Silla Observatory, Chile

Miscellaneous

- 2007 (4-10 March) Attended 37th Saas-Fee advanced course of the Swiss Society for
Astrophysics and Astronomy, “The Origin of the Galaxy and Local Group”,
Mürren, Switzerland

First Author Refereed Publications

- Muñoz R. R.**, Majewski, S. R., & Johnston, K. V. “Modeling the Structure and Dynamics of Dwarf Spheroidal Galaxies with Dark Matter and Tides,” 2008, *ApJ*, *in press*, arXiv:0712.4312
- Muñoz R. R.**, Carlin, J. L., Frinchaboy, P. M., Nidever, D. L., Majewski, S. R., & Patterson, R. J. “Exploring Halo Substructure with Giant Stars: The Dynamics and Metallicity of the Dwarf Spheroidal in Boötes,” 2006, *ApJ*, 650, L51
- Muñoz R. R.**, Majewski, S. R., Zaggia, S., Kunkel, W. E., Frinchaboy, P. M., Nidever, D. L., Crnojevic, D., Patterson, R. J., Crane, J., Johnston, K. V., Sohn, S. T., Bernstein, R. & Shectman, S. “Exploring Halo Substructure with Giant Stars XI: The Tidal Tails of the Carina Dwarf Spheroidal Galaxy and the Discovery of Magellanic Cloud Stars in the Carina Foreground,” 2006, *ApJ*, 649, 201
- Muñoz R. R.**, Frinchaboy, P. M., Majewski, S. R., Kuhn, J. R., Chou, M.-Y., Palma, C., Sohn, S., Patterson, R. J. & Siegel, M. H., “Exploring Halo Substructure with Giant Stars: The Velocity Dispersion Profiles of the Ursa Minor and Draco Dwarf Spheroidals At Large Angular Separations,” 2005, *ApJ*, 631, L137

Co-Author Refereed Publications

- Majewski, S. R., Beaton, R. L., Patterson, R. J., Kalirai, J. S., Geha, M. C., **Muñoz R. R.**, Seigar, M. S., Guhathakurta, P., Bullock, J. & Rich, R. M., “Discovery of Andromeda XIV: A Dwarf Spheroidal Dynamical Rogue in the Local Group?,” 2007, *ApJ*, 670, L9
- Chou, M. Y., Majewski, S. R., Cunha, K., Smith, V. V., Patterson, R. J., Martinez-Delgado, D., Law, D. R., Crane, J. D., **Muñoz R. R.**, Garcia Lopez, R., Geisler, D., & Skrutskie, M. F., “A 2MASS All-Sky View of the Sagittarius Dwarf Galaxy: Variation of the Metallicity Distribution Function Along the Sagittarius Stream,” 2007, *ApJ*, *in press*
- Siegel, M. H., Majewski, S. R., Sohn, S. T., Shetrone, M. D., **Muñoz R. R.**, & Patterson, R. J., “Exploring the Leo II dSph: Wide Field Photometry & Spectroscopy,” 2007, *ApJ*, *submitted*
- Sohn, S. T., Majewski, S. R., **Muñoz R. R.**, Kunkel, W. E., Johnston, K. V., Ostheimer, J. C., Guhathakurta, P., Patterson, R. J., Siegel, M. H., & Cooper, M. “Exploring Halo Substructure with Giant Stars. X. Extended Dark Matter or Tidal disruption?: The Case for the Leo I Dwarf Spheroidal Galaxy,” 2007, *ApJ*, 663, 960
- Rocha-Pinto, H. J., Majewski, S. R., Skrutskie, M. F., Patterson, R. J., Nakanishi, H., **Muñoz R. R.** & Sofue, Y. “The Dog on the Ship: The Canis Major Dwarf as an Outlying part of the Argo Star System,” 2006, *ApJ*, 640, L147
- Frinchaboy, P. M., **Muñoz R. R.**, Phelps, R. L., Majewski, S. R. & Kunkel, W. E. “Photometry and Spectroscopy of Old, Outer Disk Star Clusters: Berkeley 29, Saurer 1 and BH176,” 2006, *AJ*, 131, 922
- Majewski, S. R., Frinchaboy, P. M., Kunkel, W. E., Link, R., **Muñoz R. R.**, Ostheimer, J. C., Palma, C., Patterson, R. J., & Geisler, D. “Exploring Halo Substructure with Giant Stars. VI. Extended Distributions of Giant Stars Around the Carina Dwarf Spheroidal Galaxy – How Reliable are They?,” 2005, *AJ*, 130, 2677

Frinchaboy, P. M., Majewski, S. R., Crane, J. D., Reid, I. N., Rocha-Pinto, H. J., Phelps, R. L., Patterson, R. J., **Muñoz R. R.** “Star Clusters in the Galactic Anticenter Stellar Stream and the Origin of Old Open Clusters,” 2004, ApJ, 602, L21

Public Presentations

Invited talk: “Modeling the Extended Structure of the Carina Dwarf Spheroidal”,
Astrophysical Probes of Dark Matter, The Center for Cosmology,
University of California, Irvine (Irvine, CA), March 24, 2007

Invited talk: “Modeling the Extended Structure of the Carina Dwarf Spheroidal”,
The Milky Way Halo - Stars and Gas Conference,
Argelander Institut für Astronomie (Bonn, Germany), May 29 - June 2, 2007
I could not attend this conference due to problems with renewing my visa on time.

Dissertation talk: “Mapping Galactic Halo and dSph Substructure with Giant Stars”,
211th AAS Meeting (Austin, TX), January 11, 2008

Contributed talk: “Modeling the Tidal Tails of the Carina Dwarf Spheroidal,” Globular Clusters-
Dwarf Galaxies Connection, University of Michigan (Ann Arbor, MI), August 29, 2007

Contributed talk: “The Tidal Tails of the Carina Dwarf Spheroidal and Chance Discovery of a
Very Large LMC Halo,” The Magellanic Clouds and dSph satellites Conference, University
of Vienna (Vienna, Austria), April 12, 2006

Contributed talk: “Exploring the Extended Structure of Galactic Dwarf Spheroidals,”
UVa Astronomy Symposium, University of Virginia (Charlottesville, VA), February 4, 2006

Contributed talk: “Exploring the Extended Structure of Galactic Dwarf Spheroidals,”
Mass and Mystery in the Local Group Conference, Institute of Astronomy, Cambridge Uni-
versity (Cambridge, UK), July 21, 2005

Conference Proceedings

Muñoz R. R., Carlin, J., Chatzikos, M., Hayes, A., Kanneganti, S., Mellon, R., Oishi, J., Park,
C., Singhal, A., Sivakoff, G, Majewski, S. R., Skrutskie, M. J. & Sohn, S. T., “Tracing
Galactic Metallicity Gradients With the 2MASS Point Source Catalog,” 2004, in “Milky
Way Surveys: The Structure and Evolution of our Galaxy,” eds. D. Clemens, R. Shah & T.
Brainerd, ASP, 2004, p.283

Majewski, S. R., **Muñoz R. R.**, Westfall, K. B., & Patterson, R. J. , “Dynamics of Disrupting
Milky Way Satellite Galaxies and Tidal Streams,” 2005, in “Stellar Astrophysics with the
World’s Largest Telescopes: First International Workshop on Stellar Astrophysics with the
World’s Largest Telescopes,” eds. J. Mikolajewska & A. Olech, AIP Conference Proceed-
ings, Vol. 752. New York: American Institute of Physics, 2005., p.194-198

Frinchaboy, P. M., **Muñoz R. R.**, Majewski, S. R., Friel, E. D., Phelps, R. L., & Kunkel, W. E.,
“Star Clusters in the Galactic Anticenter Stellar Structure: New Radial Velocities and Metal-
licities,” 2005, in “Chemical Abundances and Mixing in Stars in the Milky Way and its
Satellites,” eds. L. Pasquini & S. Randich, ESO Astrophysics Symposia (astro-ph/0411127)
R. R. Muñoz – Curriculum Vitae

Poster Presentations

- Muñoz R. R.**, Carlin, J., Chatzikos, M., Hayes, A., Kanneganti, S., Mellon, R., Oishi, J., Park, C., Singhal, A., Sivakoff, G, Majewski, S. R., Skrutskie, M. J. & Sohn, S. T., “Tracing Galactic Metallicity Gradients With the 2MASS Point Source Catalog,” at the 5th Boston University Astrophysics Conference held 15-17 June, 2003 at Boston University, Boston, MA, USA
- Muñoz R. R.**, Majewski, S. R., Kunkel, W. E., Patterson, R. J. & Frinchaboy, P. M., “Exploring the Extended Structure of the Carina dSph: Evidence for Tidal Disruption?,” at the Structure and Evolution of the Milky Way and Its Surroundings Workshop held 5-9 December, 2004 at Ringberg Castle, Bavaria, Germany
- Frinchaboy, P. M., **Muñoz R. R.**, Majewski, S. R., “Chemodynamics of Outer Disk Star Clusters: Edge of the Disk or Tidal Debris?,” at the Robert J. Huskey Graduate Research Exhibition, Charlottesville, VA, April 11, 2005
- Frinchaboy, P. M., **Muñoz R. R.**, Majewski, S. R., Friel, E. D., Phelps, R. L., & Kunkel, W. E., “The Galactic Anticenter Stellar Structure and Outer Old Open Cluster Origins,” at the 205th Meeting of the American Astronomical Society, San Diego, CA, Jan 9–13, 2005
- Frinchaboy, P. M., **Muñoz R. R.**, Majewski, S. R., Friel, E. D., Phelps, R. L., & Kunkel, W. E., “Star Clusters in the Galactic Anticenter Stellar Structure: New Radial Velocities and Metallicities,” at the Chemical Abundances and Mixing in Stars in the Milky Way and its Satellites conference, Grosseto, Italy, Sept 13–17, 2004
- Slesnick, C. L., Rhee, J., Kundu, A., Patterson, R. J., Majewski, S. R., Kunkel, W. E., Geisler, D. P., **Muñoz R. R.**, and 4 coauthors, “Properties of Stars Selected by the Grid Giant Star Survey for the Space Interferometry Mission Astrometric Grid” at the 197th Meeting of the American Astronomical Society, 2000
- Patterson, R. J., Majewski, S. R., Kundu, A., Kunkel, W. E., Johnston, K. V., Geisler, D. P., Gieren, W., & **Muñoz R. R.**, “The Grid Giant Star Survey for the SIM Astrometric Grid” at the 195th Meeting of the American Astronomical Society, 1999