

Héctor Martínez Rodríguez

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Curriculum Vitae

Education

- 2014 to date **Ph.D. in physics**, *University of Pittsburgh*, Pittsburgh, PA.
Neutronization in Type Ia Supernovae. Supervised by Dr. Carles Badenes Montoliu
- 2013–2014 **M.Sc. in astrophysics**, *Universidad Complutense de Madrid*, Madrid.
CARMENES target characterisation: mining public archives for high-resolution spectra of M dwarfs with exoplanets. Supervised by Drs. David Montes Gutiérrez and José Antonio Caballero Hernández
- 2008–2013 **Extended B.Sc. in physics**, *Universidad Complutense de Madrid*, Madrid.
5-year plan. Specialized in fundamental physics

Publication summary

4 refereed publications (2 first-author) + 5 in preparation (4 first-author) + 4 non-refereed publications

Grants and Scholarships

- Spring 2018 **Ph.D. in astrophysics**, *University of Pittsburgh*.
Testing sub-Chandrasekhar Models for Type Ia Supernovae with Chandra Observations of Supernova Remnants (Chandra Cycle 19 grant 19500413); \$20k
- Fall 2017 **Ph.D. in physics**, *University of Pittsburgh*.
- Fall 2016 PITT PACC Predoctoral fellowship; \$11k
- Summer 2017 **Ph.D. in physics**, *University of Pittsburgh*.
Zaccheus Daniel Predoctoral Fellowship; \$10k
- 2014–2015 **Ph.D. in physics**, *University of Pittsburgh*.
Teaching assistant position
- 2013–2014 **M.Sc. in astrophysics**, *Universidad Complutense de Madrid*, Departamento de Astrofísica y Ciencias de la Atmósfera.
Research grant from the Spanish Ministry of Education; €3k
- 2013 **M.Sc. in astrophysics**, *Universidad Complutense de Madrid*.
Grant from the Spanish Ministry of Education; €4.5k
- 2010–2013 **B.Sc. in physics**, *Universidad Complutense de Madrid*.
Grant from the Spanish Ministry of Education; €1k/year
- 2008–2009 **B.Sc. in physics**, *Universidad Complutense de Madrid*.
Excellence Grant from the Community of Madrid; €4.5k

Honors and Awards

- 2018 **Ph.D. in astrophysics**, *University of Pittsburgh*.
- 2017 Honoree student
- 2017 **Ph.D. in astrophysics**, *University of Pittsburgh*.
Thomas-Lain Scholarship Award (\$4.5k)
- 2016 **Ph.D. in astrophysics**, *University of Pittsburgh*.
Outstanding speaker at the Grad Expo (March 24th)
- 2014 **M.Sc. in astrophysics**, *Universidad Complutense de Madrid*.
Graduated as the first student out of a class of twenty-one (percentile 100%)
- 2008 **Pre-college**, *IES Gran Capitán*.
Honour Mention in Spain's Physics Olympiad, classified within the 100 best students of Universidad Complutense de Madrid's SAT

Conferences

Oral Contributions

- February 2018 **Observational Signatures of Type Ia Supernova Progenitors III**, *Lorentz Center, Leiden, Netherlands*.
Testing explosion models with bulk properties of SNRs
H. Martínez-Rodríguez et al.

Poster Contributions

- June 2017 **Fifty-One Erg (FOE)**, *Oregon State University, Corvallis, OR, USA*.
Observational evidence for high neutronization in supernova remnants
H. Martínez-Rodríguez et al.
- October 2016 **White House Frontiers Conference Astronomy Night at Allegheny Observatory**, *Pittsburgh, PA, USA*.
Understanding supernovae
- July 2016 **Proceedings of the XII Scientific Meeting of the Spanish Astronomical Society**, *Highlights of Spanish Astrophysics IX*, Bilbao, Spain.
Carmencita, the CARMENES Cool Dwarf Information and Data Archive
J. A. Caballero et al.
- June 2016 **Proceedings of Cool Stars 19**, *The 19th Cool Stars, Stellar Systems and the Sun workshop*, Uppsala, Sweden.
Carmencita, the CARMENES Input Catalogue of Bright, Nearby M Dwarfs
J. A. Caballero et al.
- September 2014 **Proceedings of the XI Scientific Meeting of the Spanish Astronomical Society**, *Highlights of Spanish Astrophysics VIII*, Teruel, Spain.
CARMENES. Mining public archives for stellar parameters and spectra of M dwarfs with master thesis students
J. A. Caballero et al.
- June 2014 **Proceedings of Cool Stars 18**, *The 18th Cool Stars, Stellar Systems and the Sun workshop*, Flagstaff, AZ, USA.
Preparation of the CARMENES input catalogue: mining public archives for stellar parameters and spectra of M dwarfs with master thesis students
D. Montes et al.

Presentations

- December 20th, 2017 **Observational evidence for high neutronization in supernova remnants**, European Space Astronomy Center (ESAC), Madrid.
- August 1st, 2017 **Observational evidence for high neutronization in supernova remnants**, Ohio State University.
- June 20th, 2017 **Observational evidence for high neutronization in supernova remnants**, University of Santa Bárbara.
- June 13th, 2017 **Observational evidence for high neutronization in supernova remnants**, University of Santa Cruz.
- March 29th, 2017 **Observational evidence for high neutronization in supernova remnants**, Harvard Smithsonian Center for Astrophysics.
- December 7th, 2016 **Observational evidence for high neutronization in supernova remnants**, University of Berkeley.
- April 8th, 2016 **Neutronization in Type Ia supernovae**, Carnegie Observatories.
- March 30th, 2016 **Neutronization in Type Ia supernovae**, University of Berkeley.
- March 24th, 2016 **Neutronization during carbon simmering in Type Ia supernova progenitors**, University of Pittsburgh Grad Expo.

Seminars

- December 5th, 2017 **How to succeed in a foreign doctorate program**, Universidad Complutense de Madrid.
- November 24th, 2015 **How to succeed in a foreign doctorate program**, Universidad Complutense de Madrid.
- November 27th, 2014 Seminar for the M.Sc. degree in astrophysics
- March 5th, 2014 **Orientation tips for joining a foreign doctorate program**, Universidad Complutense de Madrid.
Seminar for the B.Sc. degree in physics

Service

- May 2018 **Volunteer judge for Intel ISEF 2018**, Physics and Astronomy, Pittsburgh.
- 2018 to date **Referee for The Astrophysical Journal.**
- 2016 to date **Graduate student mentor.**
- 2016 - 2018 **Graduate Council member**, *Leader and co-author of a peer mentorship program guide for all the departments in the Dietrich School of A&S.*

Teaching Experience

- 2015 **Astronomy teacher.**
Buhl Academy, Carnegie Science Center, Pittsburgh
- 2014–2015 **Teaching assistant**, *Stars, Galaxies & Cosmos and Stonehenge to Hubble.*
- 2011–2012 **Course assistant**, *Mathematical methods in physics.*
B.Sc. in Physics. Universidad Complutense de Madrid.

Additional Information

- October–November 2015 **NASA visitor**, *NASA Goddard Space Flight Center*, Greenbelt, MD.
Collaborator: Dr. Hiroya Yamaguchi
- June 2015 **SciCoder Workshop**, *Python and SQL programming*.
NYU, New York City
- May 2014 **Astronomical observation**.
Calar Alto Observatory (CAHA), Almería, Spain

Peer-Reviewed Publications

First Author

- July 2017 **Observational evidence for high neutronization in supernova remnants: implications for Type Ia supernova progenitors**.
Martínez-Rodríguez, H., Badenes, C., Yamaguchi, H., Bravo, E., Timmes, F. X., Miles, B. J., Townsley, D. M., Piro, A. L., Mori, H., Andrews, B. & Park, S. 2017, **ApJ**, 843, 35
- July 2016 **Neutronization during carbon simmering in Type Ia supernova progenitors**.
Martínez-Rodríguez, H., Piro, A. L., Schwab, J. & Badenes, C. 2016, **ApJ**, 825, 57

Co-Author

- December 2017 **Exploring the Carbon Simmering Phase: Reaction Rates, Mixing, and the Convective Urca Process**.
Schwab, J., Martínez-Rodríguez, H., Piro, A. L. & Badenes, C. 2017, **ApJ**, 851, 105
- January 2017 **The origin of the iron-rich knot in Tycho's supernova remnant**.
Yamaguchi, H., Hughes, J. P., Badenes, C., Bravo, E., Seitenzahl, I. R., Martínez-Rodríguez, H., Park, S. & Petre, R. 2017, **ApJ**, 834, 124

Unrefereed Publications

- March 2017 **Carmencita, the CARMENES Cool dwarf Information and data Archive**.
Caballero, J. A., Cortés-Contreras, M., Alonso-Floriano, F. J., Montes, D., Quirrenbach, A., Amado, P. J., Ribas, I., Reiners, A., Abellán, F. J., Béjar, V. J. S., Brinkmoller, M., Czesla, S., Dorda, R., Gallardo, I., Hidalgo, D.; Holgado, G., Fedriani, R., González-Álvarez, E., Jeffers, S. V., Kim, M., Klutsch, A., Lamert, A., Llamas, M., López-Santiago, J., Martínez-Rodríguez, H., Morales, J. C., Passegger, V. M., Schofer, P. & Zechmeister, M., **Highlights on Spanish Astrophysics IX, Proceedings of the XII Scientific Meeting of the Spanish Astronomical Society**, 18-22 July, 2016, Bilbao, Spain, ISBN 978-84-606-8760-3. A. J. Cenarro, F. Figueras, C. Hernández-Monteagudo, A. Sánchez-Lavega, S. Pérez-Hoyos (eds.), p. 496-496

- September 2014 **CARMENES. Mining public archives for stellar parameters and spectra of M dwarfs with master thesis students.**
Caballero, J. A., Montes, D., Alonso-Floriano, F. J., Cortés-Contreras, M., González-Álvarez, E., Hidalgo, D.; Holgado, G., Martínez-Rodríguez, H., Sanz-Forcada, J. & López-Santiago, J., **Highlights of Spanish Astrophysics VIII, Proceedings of the XI Scientific Meeting of the Spanish Astronomical Society**, 8-12 September, 2014, Teruel, Spain, ISBN 978-84-606-8760-3. A. J. Cenarro, F. Figueras, C. Hernández-Monteagudo, J. Trujillo Bueno, and L. Valdivielso (eds.), p. 595-595
- July 2014 **CARMENES instrument overview.**
Quirrenbach, A. et al. 2014, **Proceedings of the SPIE**, Volume 9147, id. 91471F
12 pp.
- June 2014 **Preparation of the CARMENES Input Catalogue: Mining Public Archives for Stellar Parameters and Spectra of M Dwarfs with Master Thesis Students.**
Montes, D., Caballero, J. A., Alonso-Floriano, F. J., Cortés Contreras, M., González-Álvarez, E., Hidalgo, D., Holgado, G., Llamas, M., Martínez-Rodríguez, H. & Sanz-Forcada, J., **18th Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, Proceedings of the conference held at Lowell Observatory**, 8-14 June, 2014. Edited by G. van Belle and H.C. Harris., pp.651-664