

HÉCTOR MARTÍNEZ RODRÍGUEZ, Ph.D.

☎ +34 630661519 | ✉ hectorhache.mr@gmail.com | 🌐 <https://github.com/hector-mr/>
in <https://www.linkedin.com/in/hector-mr/> | 📧 hectorhache.mr | 🏠 Madrid, Spain

SUMMARY

I am a graduate student in astrophysics with direct experience in mathematical, statistical and computational methods to efficiently process, model, interpret and visualize data. For over five years, I have worked on intensive numerical calculations devoted to successfully achieving scientific goals. I am eager to keep delving into machine learning algorithms to increase my proficiency at predictive modeling.

EXPERTISE

- Practical machine learning (regression, optimization).
- Significance and likelihood analyses.
- Statistical analyses of large, multi-dimensional data.
- Large data management: gigabyte to terabyte processing.
- Mathematical and computational modeling.
- Presentation to technical and non-technical audiences.
- Mentoring of junior scientists (academic).

EXPERIENCE

Graduate Research and Teaching

August 2014 – Present

University of Pittsburgh, Department of Physics and Astronomy

Scientific research of Type Ia supernovae using computational modeling, regression techniques, data mining, data analysis and data visualization. Experience with VPN clusters and supercomputers. Graduate student mentor and member of the Dietrich School of Arts and Sciences Graduate Council. Taught astronomy courses (2 semesters).

Teaching associate professional

August 2018

University of Santa Barbara, MESA Summer School

Annual week-long course of lectures and lab-exercises for graduate students, post-docs, and faculty from all around the world. Prepared and tested the Fortran labs and helped participants by providing advice, debugging help, and explanations of results.

Research assistant

April 2018

Ohio State University, Columbus, Center for Cosmology and Astro-Particle Physics

Computational modeling and regression techniques in Fortran and Python.

Research assistant

October – November 2015

NASA Goddard Space Flight Center, Greenbelt

Computational modeling and regression techniques in Fortran and Python.

Research assistant

2012 – 2014

Universidad Complutense de Madrid, Facultad de Ciencias Físicas

Computational modeling and regression techniques using Mathematica and OriginPro.

EDUCATION

Doctor of Philosophy (Astrophysics)

University of Pittsburgh, Pittsburgh, Pennsylvania

Master of Science (Astrophysics)

Universidad Complutense de Madrid

Bachelor of Science (Physics)

Universidad Complutense de Madrid

TECHNICAL SKILLS

- Proficient with Python and Fortran.
- Experience with SQL and shell (bash).
- Analysis tools including Numpy, Pandas, Scipy, Scikit-learn, Matlab, Mathematica, OriginPro.
- Version control: Git, GitHub.
- Operative systems: Windows, Unix / Linux.
- Scientific writing: \LaTeX .
- Others: Microsoft Office (Word, Excel, PowerPoint, etc.).

MISCELLANEOUS

- 10 publications (3 first-author) + 6 in preparation (4 first-author).
- Experienced presenter of technical work (colloquia, seminars, and conferences).
- Awarded speaker at UPitt's Grad Expo (general public talk about scientific research).
- Languages: Spanish (native), English (bilingual), French (fluent).
- [Machine Learning by Stanford University on Coursera](#). Certificate earned at Wednesday, January 16, 2019 1:39 AM GMT.
- [SciCoder Workshop](#). Python and SQL training at New York University (2015).
- Driving license: B (Spain, USA).
- Photography and reading enthusiast. Proficient biker, occasional soccer and basketball player.

RESEARCH OVERVIEW

My academic research has focused on computational modeling and applied regression techniques on large multi-dimensional data sets to better understand fundamental physics, stellar astrophysics and supernovae. This translates into thorough comparisons between theoretical predictions and observational data in order to find trends and optimal-fitting models, which involves intensive numerical simulations. My work included data analysis and interpretation, as well as the publication (papers) and presentation (conferences, invited seminars) of scientific results. I have experience within small collaborations spanning multiple institutions.

REFERENCES

- [Dr. Carles Badenes](#) (badenes@pitt.edu)
- [Dr. Anthony L. Piro](#) (piro@carnegiescience.edu)
- [Dr. Eduardo Bravo](#) (eduardo.bravo@upc.edu)
- [Dr. Hiroya Yamaguchi](#) (yamaguchi@astro.isas.jaxa.jp)
- [Dr. Katie Auchettl](#) (katie.auchettl@nbi.ku.dk)
- [Dr. José Antonio Caballero](#) (caballero@cab.inta-csic.es)