

Curriculum Vitae

Marcel R. Haas

Personal Information

Dr. Marcel Richard Haas
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Birth date/place: March 26, 1983, Oosterhout (NB), the Netherlands
Nationality: Dutch
References on request.

Interests: Data science, data analysis, data visualization, data mining, analytics, machine learning, artificial intelligence, statistics, physical modeling, statistical modeling, simulations, astrophysics, interdisciplinary science, social physics, open data, open source software, Python.

Professional Experience

- *Current: Freelance data scientist.* As a freelancer, I have done a variety of data science assignments, among which: a machine learning based fraud detection model for insurers in Switzerland, an optimization of donation invitation strategy for homeless shelters in Canada, a scoring mechanism for a consumer bargain app and workshops on topics like machine learning and Bayesian statistics.
- *Current: DSW Zorgverzekeraar, Schiedam, NL.* I work as **lead data scientist** in the business intelligence department of a healthcare insurance provider, which provides all departments of the company with a large range of reports and dashboards, as well as ad-hoc data or analysis requests using a selection of SAS and Python tools. **I established DataLab** and am responsible for that team of four, that is using advanced analytics, machine learning, and data visualization for a broad variety of business problems. I had a leading role in two long-term projects, one to have more graphic-based reports, and one to implement a (partly machine learning based) automated framework for fraud detection.
- *2012 - 2013: Rutgers University, New Brunswick (NJ), USA.* Independent Postdoctoral Research Fellow. Modeling of the observational process for a future large radio telescope to create mock observations. Using very large supercomputer simulation datasets ($\sim 100\text{TB}$) we statistically modeled the largest survey done with the Hubble Space Telescope with an international team of ~ 50 people. My proposal won funding for two undergraduate students to work with me on the analysis of hydrodynamical supercomputer simulations of galaxy formation. I also was tutor of 6 students in a research project for Rutgers' undergraduate course 'Renewable Energy' in the Department of Mechanical Engineering on 'Energy harvesting on handheld devices'.
- *2010 - 2012: Space Telescope Science Institute, Baltimore (MD), USA.* Postdoctoral Research Fellow. We developed software for the first ever mock Hubble Space Telescope observations from hydrodynamical supercomputer simulations. I led the team of 6 people (including 2 graduate students) in our efforts to model astrophysical sources, the telescope and instrument and the methods observers would use on real data. As postdoc representative in a committee, we designed and implemented a formal mentoring system for postdocs. I taught several guest lectures in a graduate course in Physics at the Johns Hopkins University ('Numerical Methods in Physics').
- *2006 - 2010: Universiteit Leiden.* PhD student at Leiden Observatory. Independent scientific research that led to a PhD thesis, titled 'Nature and Nurture in Galaxy Formation Simulations'. It is based on large and smaller scale numerical models of galaxy evolution. Co-supervision of a MSc student research project.
- *2004 - 2006: NOVA College, Amstelveen.* Teacher Physics (HAVO 4&5), tutor of 8 students. (.17 fte)

Education

- December 2010: PhD in Astrophysics, Leiden Observatory, Leiden University (advisors: dr. Joop Schaye and prof. dr. Marijn Franx), on a thesis titled 'Nature and Nurture in Galaxy Formation Simulations'.
- 2006: Master of Science Astrophysics ('*cum Laude*'), Utrecht University (supervisor: prof. dr. Henny Lamers), thesis: 'Star clusters in their host galaxies'.
- 2004: Bachelor of Science Physics and Astronomy ('*with honors*'), Utrecht University.
- 2001: Gymnasium (grammar school, science major), Alberdingk Thijm College, Hilversum.
- *Other courses*: Process mining (2017), Deep Learning with SAS (2016), Data mining and visualization (2016), Economic principles for scientists (2013), Writing in the sciences (2012), Software Carpentry (2012), Advanced Python Mastery (by David Beazley, 2011), Introduction to artificial intelligence (2011)
- *Professional development*: Intercultural communication, How to manage your supervisor, Giving scientific and technical presentations.

Extracurricular activities

- 2014 - ...: Mentoring and coaching, on transitioning from academic hard sciences to industry careers.
- 2011 - 2012: Member of panel 'on the State of the Postdoctoral Experience for Scientists and Engineers - Revisited', for the American National Academy of Sciences.
- 2008 - 2009: Dutch National Committee for the International Year of Astronomy 2009, in which I coordinated outreach activities for children and youth.
- 2006: Organising committee of the Dutch Astronomers Conference.
- I have always been active in popularisation of astronomy. I wrote a bi-monthly section on astronomical news for a children's magazine. This magazine is published by the Youth Association for Astronomy in the Netherlands (JWG), where I also served on the national board for 10 years (2 years as treasurer, 3 as chair). In 6 of those years I also served on the boards of related organisations ('KNVWS' and 'Stichting De Koepel') as representative for the youth. I co-organized a dozen astronomy related camps in the Netherlands and abroad and gave tens of public talks to a wide variety of audiences. In 2007 I won the Kaiser Prize for astronomy popularization for being part of the organisation of the first Dutch Astronomy Olympiad. In 2004, I was a member of the organising committee of a summer school for high school teachers of the European Association for Astronomy Education (EAEE).

Computers

Operating systems: Linux/UNIX, MacOS, Windows

Daily use: Python (including pandas, numpy, scipy, matplotlib, scikit-learn, and other packages), SAS (including Base, Enterprise Guide, Enterprise Miner, DI Studio, Visual Analytics, Fraud Framework, and JMP)

Experienced with: SQL, Version control, Shell scripting, IDL, HTML/css, Fortran 77/90/95, MS Office

Basic knowledge: C/C++, R, MPI, Hadoop/MapReduce

Languages & Other

Mother tongue: Dutch.

Other human languages: English (fluent) and German (fair).

Other interests: Go (board game), craft beer, motorcycling.

Scientific publications

First author, refereed

1. Marcel R. Haas, Joop Schaye, C.M. Booth, Claudio Dalla Vecchia, Volker Springel, Tom Theuns, Robert P.C. Wiersma, 2013, MNRAS, 435, 2955, *Physical properties of simulated galaxy populations at $z=2$ – II. Effects of physics ingredients other than cooling and outflows*
2. Marcel R. Haas, Joop Schaye, C.M. Booth, Claudio Dalla Vecchia, Volker Springel, Tom Theuns, Robert P.C. Wiersma, 2013, MNRAS, 435, 2931, *Physical properties of simulated galaxy populations at $z=2$ – I. Effect of metal-line cooling and feedback from star formation and AGN*
3. Marcel R. Haas, Joop Schaye, Akila Jeeson-Daniel, MNRAS, 2012, 419, 2133, *Disentangling galaxy environment and host halo mass*
4. M.R. Haas, P. Anders, 2010, A&A, 512, 79, *Variations in integrated galactic initial mass functions due to sampling method and cluster mass function*
5. M.R. Haas, M. Gieles, R.A. Scheepmaker, S.S. Larsen, H.J.G.L.M. Lamers, 2008, A&A, 487, 937, *ACS imaging of star clusters in M51. II. The luminosity function and mass function across the disk*

Co-author, refereed

6. Zachary Dugan, Sarah Bryan, Volker Gaibler, Joseph Silk, Marcel Haas, 2014, ApJ, 796, 113, *Stellar signatures of a GN jet triggered star formation*
7. Michael Berry, Rachel S. Somerville, Marcel R. Haas, Eric Gawiser, Ari Maller, Gergo Popping, S.C. Trager, 2014, MNRAS, 441, 939, *Damped Ly-alpha absorption systems in Semi-Analytic Models with multi-phase gas*
8. Joseph Silk, Vincenzo Antonuccio-Delogu, Yohan Dubois, Volker Gaibler, Marcel R. Haas, Sadegh Khochfar, Martin Krause, A&A Letters, 545, L11, *Jet interactions with a giant molecular cloud in the Galactic centre and ejection of hypervelocity stars*
9. Akila Jeeson-Daniel, Claudio Dalla Vecchia, Marcel R. Haas, Joop Schaye, 2011, MNRAS Letters, 415L, 69, *The correlation structure of dark matter halo properties*
10. Freeke van de Voort, Joop Schaye, C.M. Booth, Marcel R. Haas, Claudio Dalla Vecchia, MNRAS, 2011, 414, 2458, *The rates and modes of gas accretion on to galaxies and their gaseous haloes*
11. Joop Schaye, Claudio Dalla Vecchia, C.M. Booth, Robert P.C. Wiersma, Tom Theuns, Marcel R. Haas, Serena Bertone, Alan R. Duffy, I.G. McCarthy, Luca Tornatore, Freeke van de Voort, 2010, MNRAS, 402, 1536, *The physics driving the cosmic star formation history*
12. Laura V. Sales, Julio F. Navarro, Joop Schaye, Claudio Dalla Vecchia, Volker Springel, Marcel R. Haas, Amina Helmi, 2009, MNRAS Letters, 399, L64, *The origin of extended disk galaxies at $z=2$*
13. R.A. Scheepmaker, M.R. Haas, M. Gieles, N. Bastian, S.S. Larsen, H.J.G.L.M. Lamers, 2007, A&A, 469, 925, *ACS imaging of star clusters in M51. I. Identification and radius distribution*
14. M. Gieles, S.S. Larsen, R.A. Scheepmaker, N. Bastian, M.R. Haas, H.J.G.L.M. Lamers, 2006, A&A Letters, 446, L9-L12, *Observational evidence for a truncation of the star cluster initial mass function at the high mass end*

Other

15. Muna, D. and 154 co-authors, ArXiv, 2016, *The Astropy problem*
16. M.R. Haas, P. Anders, 2009, *Galactic consequences of clustered star formation*, in Star clusters - Basic Galactic Building Blocks Throughout Time And Space (IAU S266)
17. M.R. Haas, P. Anders, 2009, *Population synthesis from clustered star formation*, in Population synthesis planning for the next decade (IAU S262)
18. M.R. Haas, M. Gieles, R.A. Scheepmaker, S.S. Larsen, H.J.G.L.M. Lamers, N. Bastian, 2008, *Variation of the cluster luminosity function across the disk of M51*, in Mass loss from stars and the evolution of stellar clusters
19. R.A. Scheepmaker, M. Gieles, M.R. Haas, N. Bastian, H.J.G.L.M. Lamers, 2008, *Thousands of Star Clusters in M51 with HST/ACS*, in Mass loss from stars and the evolution of stellar clusters
20. R.A. Scheepmaker, M. Gieles, M.R. Haas, N. Bastian, S.S. Larsen, H.J.G.L.M. Lamers, 2006, *The radii of thousands of star clusters in M51 with HST/ACS*, in Globular Clusters: Guides to Galaxies
21. M. Gieles, S.S. Larsen, M.R. Haas, R.A. Scheepmaker, N. Bastian, 2006, *The Maximum Mass of Star Clusters*, in Globular Clusters Guides to Galaxies