



Dr. Martin Sparre

Postdoctoral researcher

Contact information

Dr. Martin Sparre
Potsdam University
Germany

Citizenship: Denmark
Website: www.martinsparre.com
Born: December 3rd 1986, Helsingør, Denmark.

Research Employment

- 2017–present **Postdoctoral researcher**, (*start: September 1st 2017*).
Postdoctoral researcher at Potsdam University, with additional funding/support from AIP Potsdam and Massachusetts Institute of Technology.
- 2015–2017 **Sapere aude fellow at HITS and DARK**, (*start: March 1st 2015*).
Sapere aude postdoctoral fellow at Heidelberg Institute for Theoretical Studies (HITS) and Dark Cosmology Centre (DARK), University of Copenhagen. Located full-time at HITS, but grant is administered by University of Copenhagen.
- 2010–2014 **PhD at DARK**.
4 year PhD programme at DARK, University of Copenhagen. During my PhD I visited HITS for 6 months and University of Leicester for 3 months.
- 2010 **CERN**.
3 month summer student programme at CERN.

Education and Academic Degrees

- 2010–2014 **PhD at University of Copenhagen**.
Degree awarded January 20th 2015.
Advisor: Prof. Johan P. U. Fynbo,
I wrote **6 first-author papers** in my PhD,
Thesis title: *Galaxy formation: observations and simulations of galaxies"*
- 2008–2012 **MSc at University of Copenhagen**.
Advisor: Prof. Johan P. U. Fynbo. Msc program was a part of the PhD program.

- 2006–2008 **BSc at University of Copenhagen.**
Advisor: Dr. Steen H. Hansen and Dr. Jesper Sommer-Larsen.
- 2003–2006 **High School.**
Frederiksborg Gymnasium, Denmark.

Grants and Prizes

- 2014 **Postdoc grant from the Danish Council for Independent Research.**
2 year post-doctorial grant for going to HITS. 1,846,907 DKK / **247,900 EUR.**
- 2014 **Sapere Aude Prize from the Danish Council for Independent Research.**
1/2 year post-doctorial grant. 499,940 DKK / **67,106 EUR.**

Software development and data analysis

- **Hydrodynamical simulations:** Running and development of simulations with the Gadget and AREPO codes. I have developed a framework to do high-resolution zoom-in simulations, and I am responsible for the *windtunnel branch* in AREPO.
- **Spectroscopic data:** I have developed a code to reduce data from the X-shooter spectrograph (at the Very Large Telescope in Chile): *XSHPipelineManager: Wrapper for the VLT/X-shooter Data Reduction Pipeline*, Astrophysics Source Code Library, record ascl:1509.001.
- **Programming languages:** C, C++, Python. Parallellisation with OpenMP and MPI.

Mentoring

- I am currently supervising the master's theses of **Mitali Damle** (Potsdam University) and **Joseph Whittingham** (AIP Potsdam). I have previously mentored the following MSc or PhD students, who have produced or will produce a refereed publication, where I am 2nd author: **Sebastian Bustamante** (published in MNRAS), **Isabella P. Carucci** (published in JCAP), **Maan Hani** (published in MNRAS) and **Emilie Gehl Skulberg** (Emilie is PhD student in Philosophy History at Cambridge University).

Teaching experience and skills

- 2020 **Lecturing.**
Taught the full semester course (online), *Computational Astrophysics: Advanced Programming*, at Potsdam University.
- 2019 **Lecturing.**
Organizer of a master's course, *A 1-week crash course on scientific programming*, at Potsdam University. I gave 20 hours of lectures/exercises. Course taught October 2018, April 2019, October 2020.
- 2018 **Lecturing.**
Organizer of a master's course, *Galaxy mergers and transformations*, at Potsdam University. I gave 15 lectures (each lecture is 2x45 min.) in the spring/summer semester 2018.
- 2013 **Didactics course.**
I took the course *Introduction to University Pedagogy*, which is a 1-week course aimed for associate professors at University of Copenhagen. The course corresponds to 2.5 ECTS.

2009-2014 **University tutoring.**
Teaching assistant in classical mechanics, relativity, thermodynamics, introduction to mathematics. University of Copenhagen

2009-2010 **High school teacher in physics.**
Part-time teacher at Frederiksborg Gymnasium.

Refereeing

Refereeing for *Monthly Notices of the Royal Astronomical Society* and *The Astrophysical Journal*.

Selected talks

2020: *Break in conference talks due to corona* 2019 **AIP, Potsdam, Germany, 1 hour seminar.**

2019 **Linking galaxies from the epoch of initial star formation to today, Sydney, Australia, invited talk, 30 min. talk.**

2018 **Illustris TNG workshop, Garching, Germany, workshop talk, 12 min. talk.**

2018 **COSMOS collaboration workshop, Copenhagen, Denmark, workshop talk, 15 min. talk.**

2018 **Galaxy interactions and mergers across cosmic time, Sexten, Italy, invited workshop talk, 25 min. talk.**

2018 **Astrophysical Shocks, AIP Potsdam, Germany, workshop talk, 20 min. talk.**

2017 **Circle of Life conference, Kruger Park, South Africa, Conference talk, 20 min. talk.**

2017 **CLUES Workshop, Madrid/Spain, Workshop talk, 30 min. talk.**

2017 **Galaxies and Stars workshop, Lund/Sweden, Workshop talk, 20 min. talk.**

2017 **SFB seminar talk, Heidelberg/HITS, seminar with 3 speakers, 15 min. talk.**

2016 **VIRGO Collaboration meeting, Durham, workshop talk, 15 min. talk.**

2016 **EPFL Lausanne, Seminar talk, 45 min. seminar.**

2016 **CCA, Center for Computational Astrophysics, 1 hour seminar.**

2016 **MPIA, Max-Planck-Institut fur Astronomie, 20 min. coffee talk.**

2016 **MPA, Max Planck Institute for Astrophysics, 30 min. lunch talk.**

2016 **ESO, European Southern Observatory, 45 min. black-board discussion.**

2016 **HITS, Heidelberg Institute for Theoretical Studies, 45 min. seminar.**

2016 **Catalina Island, Galpath conference, 25 min. conference talk.**

2016 **EWASS 2016 : European Week of Astronomy and Space Science, 15 min. conference talk.**

2015 **ESO, European Southern Observatory, 45 min. seminar.**

2014 **Caltech, 45 min. seminar.**

2014 **Obergurgl galaxy conference, 20 min. conference talk.**

2014 **AREPO-fest, workshop, Boston, 20 min. talk.**

List of publications

Ten most important publications

(Most recent publications first). The format is author list (my own name is in bold), publication year, journal abbreviation, volume number, first page, title, DOI, number of citations.

- 1. Sparre, M.**, Pfrommer, C., Vogelsberger, M.,
2019, MNRAS, 482, 5401.
The physics of multiphase gas flows: fragmentation of a radiatively cooling gas cloud in a hot wind
DOI: 10.1093/mnras/sty3063
Citations: 42
- 2. Bustamante, S., Sparre, M.**, Springel, V., Grand, R. J. J.,
2018, MNRAS, 479, 3381.
Merger-induced metallicity dilution in cosmological galaxy formation simulations
DOI: 10.1093/mnras/sty1692
Citations: 27
- 3. Hani, M. H., Sparre, M.**, Ellison, S. L., Torrey, P., Vogelsberger, M.,
2018, MNRAS, 475, 1160.
Galaxy mergers moulding the circum-galactic medium - I. The impact of a major merger
DOI: 10.1093/mnras/stx3252
Citations: 24
- 4. Sparre, M.**, Springel, V.,
2017, MNRAS, 470, 3946.
The unorthodox evolution of major merger remnants into star-forming spiral galaxies
DOI: 10.1093/mnras/stx1516
Citations: 40
- 5. Sparre, M.**, Hayward, C. C., Feldmann, R., Faucher-Giguère, C.-A., Muratov, A. L., Kereš, D., Hopkins, P. F.,
2017, MNRAS, 466, 88.
(Star)bursts of FIRE: observational signatures of bursty star formation in galaxies
DOI: 10.1093/mnras/stw3011
Citations: 120
- 6. Diemer, B., Sparre, M.**, Abramson, L. E., Torrey, P.,
2017, ApJ, 839, 26.
Log-normal Star Formation Histories in Simulated and Observed Galaxies
DOI: 10.3847/1538-4357/aa68e5
Citations: 33
- 7. Sparre, M.**, Springel, V.,
2016, MNRAS, 462, 2418.
Zooming in on major mergers: dense, starbursting gas in cosmological simulations
DOI: 10.1093/mnras/stw1793

Citations: 52

8. Sparre, M., Hayward, C. C., Springel, V., Vogelsberger, M., Genel, S., Torrey, P., Nelson, D., Sijacki, D., Hernquist, L.,
2015, MNRAS, 447, 3548.

The star formation main sequence and stellar mass assembly of galaxies in the Illustris simulation

DOI: 10.1093/mnras/stu2713

Citations: 155

9. Sparre, M., Hartoog, O. E., Krühler, T., Fynbo, J. P. U., Watson, D. J., Wiersema, K., D'Elia, V., Zafar, T., Afonso, P. M. J., Covino, S., de Ugarte Postigo, A., Flores, H., Goldoni, P., Greiner, J., Hjorth, J., Jakobsson, P., Kaper, L., Klose, S., Levan, A. J., Malesani, D., Milvang-Jensen, B., Nardini, M., Piranomonte, S., Sollerman, J., Sánchez-Ramírez, R., Schulze, S., Tanvir, N. R., Vergani, S. D., Wijers, R. A. M. J.,
2014, ApJ, 785, 150.

The Metallicity and Dust Content of a Redshift 5 Gamma-Ray Burst Host Galaxy

DOI: 10.1088/0004-637X/785/2/150

Citations: 62

10. Sparre, M., Sollerman, J., Fynbo, J. P. U., Malesani, D., Goldoni, P., de Ugarte Postigo, A., Covino, S., D'Elia, V., Flores, H., Hammer, F., Hjorth, J., Jakobsson, P., Kaper, L., Leloudas, G., Levan, A. J., Milvang-Jensen, B., Schulze, S., Tagliaferri, G., Tanvir, N. R., Watson, D. J., Wiersema, K., Wijers, R. A. M. J.,
2011, ApJ, 735, L24.

Spectroscopic Evidence for SN 2010ma Associated with GRB 101219B

DOI: 10.1088/2041-8205/735/1/L24

Citations: 65