

Miguel Figueira Sebastião

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Education

- 2014–2017 **Ph.D. in Astrophysics and Cosmology**, Aix Marseille University, Marseille
 - Subject: Ionized regions and star formation in the Galaxy
 - Advisors: Annie Zavagno, Leonardo Bronfman
 - PhD graduation date: 20/09/2017
- 2012–2013 **Master of Science**, Granada University, Granada
Master degree in astrophysics and particle physics with honours
- 2011–2012 **Master of Science**, Paris-Sud XI University, Orsay
Master degree in solid state physics
- 2009–2011 **Bachelor of Science**, Paris-Sud XI University, Orsay
Physics

Professional experience

Vocational

- 2024–2025 **Guest scientist (NAWA Bekker)**, Max Planck Institute for Radio Astronomy, Bonn, Germany
- 2022 **Postdoctoral fellow**, Nicolaus Copernicus University, Toruń, Poland
- 2018–current **Postdoctoral fellow**, National Centre for Nuclear Research, Warsaw, Poland
- 2014–2017 **Monitor for university students**, Aix-Marseille University, Marseille, France
Practical classes in optics, mechanics, electricity and thermodynamics (64 hours/year)
- 2012–2013 **Master Internship**, Instituto de Astrofísica de Andalucía, Granada, Spain
 - Subject: Construction of a pipe-line to reduce and analyze the data of the WFC at the INT2.5m
 - Advisors : José Manuel Vilchez, Jorge Iglesias Páramo
- 2011–2012 **Master Internship**, Laboratoire de physique du solide, Orsay, France
 - Subject: Majorana fermions in quantum nanowires
 - Advisor : Pascal Simon

Miscellaneous

- 2013–2014 **Personal tutoring**, Acadomia, Angers
Maths and physics for middle school to college

Conferences and Seminars

Contributed talks

- 2023 *Induced star-formation towards RCW 120*
41st Annual Meeting of the Polish Astronomical Society, Toruń, Poland (11-15 September 2023)
- 2023 *The VIPERS quiescent population - Environmental impact on the mass-size relation*
European Astronomical Society Annual Meeting, Kraków, Poland (10-14 July 2023)
- 2022 *SFR estimations from $z = 0$ to $z = 0.9$ - SFR calibrators for star-forming galaxies at $z \sim 0.7$*
2nd Roman Juskiewicz Symposium, Warsaw, Poland (26-30 September 2022)
- 2022 *SFR estimations from $z = 0$ to $z = 0.9$ - A comparison of SFR calibrators for star-forming galaxies*
From galaxies to cosmology with deep spectroscopic surveys, Marseille, France (4-8 July 2022)
- 2021 *Induced star-formation towards RCW 120*
ISM 2021 Structure, characteristic scales, and star formation conference, Beirut, Lebanon (11-14 May 2021)
- 2020 *Star-Formation Rate estimations at $z=0.7$ using VIPERS*
NEP Conference 2020, Tajpej, Taiwan (25-27 November 2020)
- 2019 *Star formation around RCW 120 - ALMA observations*
39th Annual Meeting of the Polish Astronomical Society, Olsztyn, Poland (9-12 September 2021)
- 2019 *Star formation around RCW 120 - ALMA observations*
Journées de la SF2A, Nice, France (14-17 May 2019)

Posters

- 2023 *The VIPERS quiescent population - Environmental impact on the mass-size relation*
A journey through galactic environments, Porto Ercole, Italy (25-29 September 2023)
- 2023 *SFR estimations from $z=0$ to $z=0.9$ - A comparison of SFR calibrators for star-forming galaxies*
European Astronomical Society Annual Meeting, Kraków, Poland (10-14 July 2023)
- 2023 *APEX CO observations towards the photodissociation region of RCW 120*
European Astronomical Society Annual Meeting, Kraków, Poland (10-14 July 2023)
- 2022 *Deciphering the environmental impact on star formation in the outer Galaxy*
4th Interdisciplinary FNP Conference, Warsaw, Poland (6-7 October 2022)
- 2021 *Star Formation Rate Estimations at $0.5 < z < 0.9$ with the VIMOS Public Extragalactic Redshift Survey*
Conference of the Polish Astronomical Society, Szczecin, Poland (13-17 September 2021)
- 2020 *Star-Formation Rate estimations at $z=0.7$ using VIPERS*
The Rise of Metals and Dust in Galaxies through Cosmic Time conference, Marseille, France (26-30 October 2020)
- 2016 *Herschel observations of RCW 120*
Star formation in different environments conference, Quy Nhon, Vietnam (25-29 July 2016)
- 2015 *Herschel observations of RCW 120*
Soul for high-mass star formation conference, Puerto Varas, Chile (15-20 March 2015)

Seminars

- 2023 *High-mass stars in the Milky Way and in external galaxies*, Astronomical observatory in Piwnice, Toruń, Poland
- 2021 *Star Formation Rate Estimations at $0.5 < z < 0.9$ with the VIMOS Public Extragalactic Redshift Survey*, LAM, Marseille, France
- 2020 *Single stellar population : Stars - Isochrones - Initial Mass Function - Stellar libraries* Lecture given for a PhD class (Organizer: dr. hab. Katarzyna Małek), NCBJ, Warsaw, Poland
- 2019-2020 *Participation to the 1st, 2nd, 3rd and 4th seminarium on Star Formation and Astrochemistry* Toruń, Poland
- 2019 *Star formation around HII regions - From Herschel-HOBYS to ALMA* NCBJ, Warsaw, Poland
- 2019 *Star formation around HII regions - From Herschel-HOBYS to ALMA* Astronomical Observatory of the Jagiellonian University, Kraków, Poland
- 2018 *Star formation around HII regions - From Herschel-HOBYS to ALMA* CAMK PAN, Toruń, Poland
- 2017 *Herschel observations towards the RCW 120 and RCW 79 regions* LAM, Marseille, France
- 2016 *Talk at the SAG Gould Belt-HOBYS annual meeting about improvements of the getsources extractions*, Institut d'Astrophysique de Paris, Paris, France

Experiences

Analysis and computing skills

Computer programming: Python, IDL, Latex
Extraction code: getifs, Gaussclump, Clumpfind
SED fitting of galaxies: Code Investigating GALaxy Emission (CIGALE)
Data analysis: *Herschel*, APEX and ALMA data

Observing proposals

- 2023 **JCMT:** Magnetic field observations towards dense star-forming clumps of the RCW 120 H II region (PI: Doris Arzoumanian)
- 2023 **APEX:** The fraction of dense gas in star-forming clumps in the outer Galaxy (PI: Agata Karska)
- 2023 **IRAM-30m:** Physics and chemistry of star-forming clumps in the outer Galaxy: an OGHReS-selected sample (PI: Agata Karska)
- 2022 **JCMT:** Magnetic field observations towards dense star-forming clumps of the RCW 120 H II region (PI: Doris Arzoumanian)
- 2022 **IRAM-30m:** Physics and chemistry of star-forming clumps in the outer Galaxy: an OGHReS-selected sample (PI: Agata Karska)
- 2022 **APEX:** The fraction of dense gas in star-forming clumps in the outer Galaxy (PI: Agata Karska)
- 2022 **Effelsberg:** Ammonia toward star-forming clumps in the outer Galaxy (PI: Agata Karska)
- 2016 **ALMA:** Dissecting for deciphering: a ALMA study of the high-mass star formation processes at the edges of the RCW 120 HII region (PI: Leonardo Bronfman)
- 2015-2016 **APEX:** Ionized region and star formation: characterizing the interaction of RCW 120 (PI: Leonardo Bronfman)

Supervision

- 2019- Work supervision of Francesco Pistis, Agnieszka Mirocha, Ngan Lee (PhD students), Klaudia Kowalczyk (Master student)
- 2019-2021 Member of the supervising thesis committee of the PhD student Agnieszka Mirocha
- 2019 Member of the committee for the PhD students selection for a NCN SONATA BIS grant (PI: Katarzyna Małek)
- 2018 Supervision of a high-school student (1 week internship)

Schools

- 2023 COST NanoSpace JWST Training School, La Laguna, Spain
- 2021 Summer School in Statistics for Astronomers XVI, Penn State's Center for Astrostatistics (on-line)
- 2020 JWST Master Class workshop, Toruń, Poland
- 2020 1st SMA Interferometry School, Hilo, Hawaii
- 2018 4th Cosmology School, Kraków, Poland
- 2016 9th IRAM interferometry School, Grenoble, France
- 2015 Science and technology with the E-ELT, Erice, Italy
- 2015 IRAM 30m Summerschool, Pradollano, Spain
- 2015 Detection FOCUS, Haute Provence Observatory, France
- 2012 Hadron Collider School, Göttingen University, Germany

Collaborations and collaborative visits

Collaboration

- 2022- Member of the OGHReS consortium
- 2022- Member of LSST
- 2022- Collaboration with Agata Karska (Nicolaus Copernicus University, Poland/Max-Planck Institute, Bonn)
- 2018- Collaboration with Agnieszka Pollo, Katarzyna Małek (NCBJ, Poland) and Małgorzata Siudek (IFAE, Spain)
- 2018-2020 Collaboration with Annie Zavagno and Delphine Russeil (LAM, France)

Visits

- 2022 Working visit at MPIfR: OGHReS workshop (August 2022).
- 2022 Working visit at MPIfR: Collaboration with Agata Karska, Arnaud Belloche and the OGHReS team (May 2022).
- 2019-2020 Working visits at the Nicolaus Copernicus University of Toruń. Collaboration with Agata Karska and Agnieszka Mirocha
- 2019 Working visit at the Laboratoire d'Astrophysique de Marseille. Collaboration with Annie Zavagno and Delphine Russeil

Awards & Grants

- 2024-2025 Bekker grant from the Polish National Agency for Academic Exchange (NAWA) - Identification and star-forming properties of HII bubbles in the Outer Galaxy High Resolution Survey (PI: Miguel Figueira Sebastiao) - National competition (Poland)
- 2023-2026 Grant from the National Center for Science SONATA-18 - The impact of massive stars: From the Milky Way to nearby galaxies (PI: Miguel Figueira Sebastiao) - National competition (Poland)
- 2023 NCBJ: Fundamental Research Department Award for popularization activities - Internal award (NCBJ)
- 2020-2022 Grant for the Young Scientist Project - The HII region Sh2-241 - Internal competition (NCBJ)
- 2019- Grant from the National Center for Science HARMONIA-10 - "VIPERS and beyond" (co-I, PI: Agnieszka Pollo) - National competition (Poland)
- 2018-2019 Grant for the Young Scientist Project - APEX CO observations towards RCW 120 - Internal competition (NCBJ)

Miscellaneous

- Referee for Astronomy&Astrophysics
- Administrator of the webpage of the NCBJ Astrophysics group
- Chair of the Seminar Organizing Committee of the Astrophysics group

Languages

French : Native language
English, Spanish : Proficient
Italian, Polish : Intermediate
Portuguese : Basic

Outreach

- 2023 **The Outer Galaxy High Resolution Survey - przegląd rubieży Galaktyki** (*The Outer Galaxy High Resolution Survey - observing the edge of the Galaxy*)
Published in Delta, September 2023
- 2023 **Gwiazdy Zombie** (*Zombie stars*)
Published in Delta, January 2023
- 2022 **Rejonizacja Wszechświata i gwiazdy Populacji III** (*Reionization of the Universe and Population III stars*)
Published in Delta, April 2022
- 2021 **Skąd wiadomo, ile gwiazd rodzi się w galaktyce?** (*How do we know the number of stars formed in a galaxy?*)
Published in Delta, November 2021
- 2021 **Obszary zjonizowane a formowanie się gwiazd: wymuszona implozja** (*Ionized regions and star formation: the radiation-driven implosion mechanism*)
Published in Delta, February 2021
- 2020 **Collect and Collapse: obszary zjonizowane a formowanie się gwiazd** (*The Collect and Collapse: Ionized regions and star formation*)
Published in Delta, December 2020
- 2020 **Gwiazdne przedszkola - obszary HII w Galaktyce** (*Stars for children - HII regions in the Galaxy*)
Published in Delta, April 2020
- 2016 Presentation of ISM physics to secondary school students (45 min), LAM, Marseille