

CV Date	30/01/2025
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Part A. PERSONAL INFORMATION

First Name	Ioannis		
Family Name	Myserlis		
Sex	Male	Date of Birth	13/03/1988
ID number Social Security, Passport	Y7911010J		
URL Web	https://www.iram.fr/~imyserlis/		
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Open Researcher and Contributor ID (ORCID)	0000-0003-3025-9497		

A.1. Current position

Job Title	Staff Astronomer		
Starting date	2023		
Institution	Instituto de Radio Astronomía Milimétrica		
Department / Centre	Science and Operations Group (SOG) / Instituto de Radio Astronomía Milimétrica		
Country	Spain	Phone Number	(0034) 958805454 - 225
Keywords	Astronomy and astrophysics; Astronomy; Radio source (astronomy); Quasar; Telescope; Physics astrophysics - Cosmology; Physics astrophysics - Galaxies; Active galactic nucleus; interferometry		

A.2. Previous positions (Research Career breaks included)

Period	Job Title / Name of Employer / Country
2020 - 2023	Postdoctoral researcher and Astronomer-on-Duty (AoD) / Instituto de Radio Astronomía Milimétrica / Spain
2019 - 2019	Support scientist / Effelsberg 100-m Radio Telescope / Germany
2019 - 2019	Postdoctoral researcher / Max-Planck-Institut für Radioastronomie / Germany
2015 - 2018	Postdoctoral researcher / Max-Planck-Institut für Radioastronomie / Germany

A.3. Education

Degree/Master/PhD	University / Country	Year
Doctor of Sciences (Dr. rer. nat.)	Universität zu Köln / Germany	2015
Diploma in Physics (Ptychio)	Aristotle University of Thessaloniki / Greece	2011

Part B. CV SUMMARY

Author on 88 papers in high-impact peer-reviewed journals (Q1 in WOS), including one paper in Nature, one paper in Nature Astronomy, 32 papers in Astronomy & Astrophysics, 22 papers in the Monthly Notices of the Royal Astronomical Society, 17 papers in The Astrophysical Journal Letters and 13 papers in The Astrophysical Journal. Four 1st author publications in Astronomy & Astrophysics (2023 impact factor: 5.4) and Galaxies (MDPI, 2023 impact factor: 3.2). Author on 25 publications in conference proceedings. These publications add to a total of 5225 citations (January 2025). H index: 35.

Participation in 22 international conferences and 5 advanced schools. Organizing committee member for six international conferences and meetings. 9 invited talks at international conferences or meetings.

My research is focused on radio (sub-mm, mm and cm) and optical linear and circular polarization (LP and CP) studies to probe the physical conditions and variability processes in AGN jets. I combine several aspects of astrophysical polarization: from polarimetric instrumentation and the development of high-precision data analysis techniques to VLBI polarimetry and full-Stokes radiative transfer modeling, to study the broad energy range of their emission, their prominent variability and complex structure.

I am particularly interested in the study of AGN jet micro- and macro-physics, e.g. magnetic field and plasma energetics, using multi-frequency polarization studies and the combined analysis of multi-dimensional data cubes in all Stokes parameters. In Myserlis et al. (2018b, A&A, 619, A88) we show the multi-frequency LP and CP curves for the blazar OJ287 and a long polarization angle (EVPA) rotation of about 340° . The synergy of high-cadence single dish observations and high-angular resolution VLBA polarization maps, yield strong constraints in the structure and magnetic field of the jet. The EVPA rotation was attributed to a jet component propagating on a bent, helical trajectory at the inner jet.

Similarly, in Myserlis & Contopoulos (2021, A&A, 649, A94), we provide evidence for a persistent, universal toroidal magnetic field pattern present in all galactic halos. Our analysis is based on polarization data obtained with the Very Large Array (VLA) that were used to create rotation measure (RM) maps for several nearby spiral galaxies seen edge-on. The universal magnetic field orientation is consistent with the predictions of the Cosmic Battery mechanism (Contopoulos & Kazanas 1998, ApJ, 508, 859) for generating large scale magnetic fields around active gravitating compact objects.

The comparison of observed and synthetic polarimetric datasets provides stringent constraints on the studied physical conditions. I developed a radiative transfer model to emulate the polarized emission of astrophysical plasma systems in all four Stokes parameters I, Q, U and V, accounting for emission, absorption and propagation effects, such as Faraday Rotation and Conversion. In Myserlis et al. (2016, Galaxies, 4, 58) we model the behavior of the blazar 3C454.3 and constrain several physical conditions, such as the coherence length of the magnetic field, the shock compression factor and the Doppler factor. The model performs well also in low-energy plasmas, where the Faraday rotation and conversion effects play an important role, as shown for the nuclear outflow of the galaxy NGC 4845 in Angelakis et al. (2017, Galaxies, 5, 81).

The variable, multi-band LP and CP of AGN jets is monitored through several international collaborations that I lead or actively participate, such as the QUIVER (PI), SMAPOL (PI), POLAMI (co-I), F-GAMMA (co-I), BEAM-ME and IXPE projects. I lead the effort to calibrate and image the circular polarization (CP) of AGN jets observed at mm wavelengths (43 GHz) with VLBA in the framework of the BEAM-ME program. Significant CP is detected for at least a third of the sources, suggesting that magnetic fields are stronger close to their central engine (Myserlis et al., in prep). As a member of the Event Horizon Telescope (EHT) Collaboration, I work at the polarimetry working group to recover the polarization images of the main EHT targets, especially their CP (EHTC 2023, ApJL, 957, L20).

Finally, I am interested in the advancement of polarimetric techniques to improve their accuracy and precision. This is especially important for AGN jets that usually show low polarization, especially CP, and prominent variability. I developed of a novel data analysis methodology (Myserlis et al. 2018, A&A, 609, A68) to treat several instrumental effects LP and CP with high accuracy (uncertainty $\sim 0.1\%$). The methodology is used to recover the polarization parameters of the QUIVER and F-GAMMA observations. Additionally, in terms of polarimetric instrumentation, I am leading a project to improve the accuracy of CP observations with the IRAM 30m telescope and I was actively involved in the commission of the polarization mode of its NIKA2 continuum camera.

Part C. RELEVANT ACCOMPLISHMENTS

C.1. Most important publications in national or international peer-reviewed journals, books and conferences

AC: corresponding author. (n° x / n° y): position / total authors. If applicable, indicate the number of citations

- 1 **Scientific paper**. Event Horizon Telescope Collaboration,; Akiyama, Kazunori; Alberdi, Antxon; et al; Pesce, Dominic W.2023. First M87 Event Horizon Telescope Results. IX. Detection of Near-horizon Circular Polarization. The Astrophysical Journal Letters. 957-2, pp.L20-L20.
- 2 **Scientific paper**. Di Gesu, Laura; Marshall, Herman L.; Ehlert, Steven R.; et al; Zane, Silvia. 2023. Discovery of X-ray polarization angle rotation in the jet from blazar Mrk 421. Nature Astronomy. 7, pp.1245-1258.
- 3 **Scientific paper**. Liodakis, Ioannis; Marscher, Alan P.; Agudo, Iván; et al; Zane, Silvia. 2022. Polarized blazar X-rays imply particle acceleration in shocks. Nature. 611-7937, pp.677-681.
- 4 **Scientific paper**. Myserlis, Ioannis; Contopoulos, Ioannis. 2021. An underlying universal pattern in galaxy halo magnetic fields. Astronomy & Astrophysics. 649, pp.A94-A94.
- 5 **Scientific paper**. Angelakis, E.; Fuhrmann, L.; Myserlis, I.; et al; Rachen, J.~P.2019. F-GAMMA: Multi-frequency radio monitoring of Fermi blazars. The 2.64 to 43 GHz Effelsberg light curves from 2007-2015. Astronomy & Astrophysics. 626, pp.A60-A60.
- 6 **Scientific paper**. Myserlis, I.; Komossa, S.; Angelakis, E.; Gómez, J.~L.; Karamanavis, V.; Krichbaum, T.~P.; Bach, U.; Grupe, D.2018. High cadence, linear, and circular polarization monitoring of OJ 287. Helical magnetic field in a bent jet. Astronomy & Astrophysics. 619, pp.A88-A88.
- 7 **Scientific paper**. Myserlis, I.; Angelakis, E.; Kraus, A.; et al; Zensus, J.~A.2018. Full-Stokes polarimetry with circularly polarized feeds. Sources with stable linear and circular polarization in the GHz regime. Astronomy & Astrophysics. 609, pp.A68-A68.
- 8 **Scientific paper**. Angelakis, Emmanouil; Myserlis, Ioannis; Zensus, J. Anton. 2017. Full-Stokes, Multi-Frequency Radio Polarimetry of Fermi Blazars; Monitoring and Modelling. Galaxies. 5-4, pp.81-81.
- 9 **Scientific paper**. Angelakis, E.; Hovatta, T.; Blinov, D.; et al; Zensus, J.~A.2016. RoboPol: the optical polarization of gamma-ray-loud and gamma-ray-quiet blazars. Monthly Notices of the Royal Astronomical Society. 463-3, pp.3365-3380.
- 10 **Scientific paper**. Myserlis, Ioannis; Angelakis, Emmanouil; Kraus, Alex; Fuhrmann, Lars; Karamanavis, Vassilis; Zensus, J. Anton. 2016. Physical Conditions and Variability Processes in AGN Jets through Multi-Frequency Linear and Circular Radio Polarization Monitoring. Galaxies. 4-4, pp.58-58.

C.2. Conferences and meetings

- 1 Full-Stokes monitoring of AGN jets at mm and cm wavelengths. AGN Polarimetry Research Symposium. University of Strasbourg. 2024. France. Participatory - invited/keynote talk. Conference.
- 2 The first event-horizon linear and circular polarization view of Sgr A*. International Astronomical Union General Assembly 2024. International Astronomical Union (IAU). 2024. South African Republic. Participatory - invited/keynote talk. Conference.
- 3 Blazar physics constrained by total flux and polarization variability at mm wavelengths. European Astronomical Society Annual Meeting 2023. European Astronomical Society. 2023. Poland. Participatory - invited/keynote talk. Conference.
- 4 Constraining the circular polarization around the black hole of M87. European Astronomical Society Annual Meeting 2023. European Astronomical Society. 2023. Poland. Participatory - invited/keynote talk. Conference.
- 5 Testing the Cosmic Battery with the ngEHT. ngEHT Meeting. ngEHT Collaboration. 2022. Spain. Participatory - oral communication. Conference.

- 6 High frequency circular polarization imaging of AGN jets. Event Horizon Telescope Collaboration Meeting. Event Horizon Telescope Collaboration. 2021. Participatory - oral communication. Conference.
- 7 Probing the micro-and macro-physics of AGNjets through multi-wavelength linear and circular polarization monitoring. 43rd COSPAR Scientific Assembly. COSPAR. 2021. Australia. Participatory - invited/keynote talk. Conference.
- 8 High-accuracy, linear and circular radio polarimetry as a probe of physical conditions in jets and outflows. Invited Seminar. Academy of Athens: Research Center for Astronomy and Applied Mathematics. 2019. Greece. Participatory - invited/keynote talk. Seminar.
- 9 Coupling between the small and large scale magnetic field configuration in the relativistic jet of OJ 287. A Centenary of Astrophysical Jets: Observation, Theory, and Future Prospects. SKA Global Headquarters. 2019. United Kingdom. Participatory - oral communication. Conference.
- 10 Probing the physics of (mildly) relativistic plasmas in jets and outflows with circular polarization. Radiohalos of spiral galaxies - the impact of CHANG-ES. Ruhr-University Bochum. 2017. Germany. Participatory - invited/keynote talk.