

*Curriculum Vitae*

**MARCO MASTROGIUSEPPE**

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*(May 2024)*

**PERSONAL INFORMATION**

First name: **MARCO**  
Family name: **MASTROGIUSEPPE**  
ORCID: <https://orcid.org/0000-0001-9902-8115>  
Nationality: Italian  
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**EDUCATIONAL EXPERIENCE**

- 2012**      **Ph.D. IN REMOTE SENSING** obtained from La Sapienza University of Rome. Thesis title: "Radar Sounders for Planetary Exploration" Supervisor: Prof. R. Seu; co-supervisor: Prof. Peter Edenhofer
- 2008**      **DEGREE IN TELECOMMUNICATIONS ENGINEERING** achieved with a grade of 110/110 from La Sapienza University of Rome. Thesis title: "Processing of Altimetric Data from the Cassini Probe" Supervisor: Prof. G. Picardi, Co-supervisor: Prof. R.Seu.

**PROFESSIONAL EXPERIENCE**

- 2024-present**    Since April 2024, he has held a position as Assistant professor at "Link Campus" University
- 2021-2024**      From March 2021 to March 2024, he was researcher at the DIET department of the University of Rome "La Sapienza"
- 2020-2021**      From June 2020 to February 2021, he held a "Postdoctoral Research Grant" at the National Institute of Astrophysics (INAF), titled "Study of the requirements and performance of European radar systems for the observation of NEOs and support to the test campaign within the ESA's SSA-NEO program".

**2019-2020** From February 2020 to July 2020, he served as a **Research Fellow** at the CNRS (National Center for Scientific Research), Paris, France. During this period, collaborated on the analysis, simulation, and interpretation of GPR-WISDOM signals related to the upcoming ExoMars Martian mission.

**2018-2019** From October 2018 to September 2019, he was a Research Fellow at the California Institute of Technology (Caltech), Pasadena, CA, US. During this period, engaged in research activities related to the processing and interpretation of radar data for planetary missions. Also participated in the studies for the construction of the Europa-Clipper radar in collaboration with the Jet Propulsion Laboratory (JPL) in the team led by Prof. Charles Elachi, Emeritus Professor and former Director of JPL.

**2016-2018** From October 2016 to September 2018, he held a RESEARCH GRANT titled "Analysis and interpretation of RADAR data for the VERITAS mission" issued by the DIET department of the University of Rome "La Sapienza".

**2014-2016** From October 2014 to September 2016, he served as a Research Associate at Cornell University, Ithaca, NY. During this period, engaged in research activities related to the processing and interpretation of SAR, altimetric, and radiometric data from the Cassini spacecraft in the team led by Prof. Alexander Hayes

**2012-2014** From October 2012 to September 2014, held a RESEARCH GRANT titled "Analysis of altimetric data from the Cassini spacecraft" issued by the DIET department of the University of Rome "La Sapienza".

**2010-2012** He held a collaboration contract titled "Analysis and interpretation of SHARAD/MARSIS data" issued by the DIET department of the University of Rome "La Sapienza".

**2009** He held a collaboration contract titled "Scientific analysis, telemetry and performance of the GPR SHARAD radar" issued by the DIET department of the University of Rome "La Sapienza".

**2008** He held a collaboration contract titled "Network Interface management for acquisition system data with synchronization data for GPS systems" issued by the Department of Electrical Engineering of the University of Rome "La Sapienza".

**INTERNATIONAL PROJECTS COLLABORATIONS AND PARTICIPATIONS**

- (2019) Was nominated as **Co-Leader** of the VISAR instrument (Venus Interferometric Synthetic Aperture Radar) for the upcoming Veritas mission.
- (2015) Was nominated as **Co-Investigator** of the RADAR instrument in the Europa-Clipper mission for the exploration of Jupiter's moons.
- (2013) Was nominated as an associated **RADAR TEAM MEMBER** for the Cassini-Huygens space mission for the exploration of the Saturnian system.
- (2011) Was nominated as an associated **RADAR TEAM MEMBER** for the SHARAD-MRO space mission for the study of Mars.

**COLLABORATIONS AND PARTICIPATION IN RESEARCH GROUPS**

Has collaborated and/or continues to collaborate with researchers affiliated with **ITALIAN AND FOREIGN UNIVERSITIES OR RESEARCH CENTERS:**

- Prof. Peter Edenhofer, **Faculty of Electrical Engineering and Information Technology/Research Group Antennas and Wave Propagation, Ruhr-University Bochum, Germany**. Collaboration on inversion techniques and super resolution of the radar signal (2009-2011).
- David C. Duncan, Prof. Jonathan Lunine, **Cornell University, Department of Astronomy**. Collaboration on the techniques of processing and analysis of RADAR data from the Cassini spacecraft. (2013-2017, 6 articles in journals, 11 conference articles).
- Dr. Nathaniel Putzig, Planetary Science Institute. Dr. Nathaniel Putzig, Planetary Science Institute. Collaboration on super-resolution techniques applied to the SHARAD radar sounder. (2018-2019, CSA No. C-1601-01).
- Dr. Annunziato Mangiola, **Università Cattolica del Sacro Cuore**. Collaboration on the development of a VLF receiving system for the study of very low intensity electromagnetic emissions from biological systems with highly diluted DNA aqueous solutions. BELEMAS Project (Biologic ELECTroMagnetic Signals) (2017).

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## **NATIONAL AND INTERNATIONAL SERVICES AND RECOGNITIONS**

- Achieved scientific national qualification for the functions of associate professor in the competitive sector 09/F2 - TELECOMMUNICATIONS on 03/06/2023

### **Teaching Assignments**

- Served as a teacher for the "Remote Sensing" course (6 CFU) at the Latina location of Sapienza University of Rome.
- Currently teaching the "Flight Assistance Systems" course (6 CFU), responsible for 3 CFU.

### **Participation in management or evaluation committees and editorial activities**

Since 2014, has regularly been involved in the **review of scientific articles** for the following **international journals**:

- Nature Astronomy
- IEEE Trans. on Geoscience and Remote Sensing
- Remote Sensing (mpdi)
- Advances in Space Research (Elsevier)
- PDART review for NASA
- Earth and Planetary Science Letters (Elsevier)

### **Organization and Attendance at Conferences, Workshops, and Special Sessions**

Has been invited to and attended various national and international workshops and conferences:

- 14th International Planetary Probe Workshop (IPPW 14), 12-16 June, 2017, The Hague, The Netherlands : "Radar Sounding On Ocean Worlds" (**Invited**)
- Planetary Lunch Colloquim Series, Massachusetts Institute of Technology (MIT), 17th November 2015, Boston, MA : "Sounder data analysis for planetary exploration" (**Invited**)
- Colloquia, Cornell University, Ithaca, NY, 14th September 2015: "Radar sounders: a new era for planetary explorations" (**Invited**)
- Planetary Science seminar, Caltech, Pasadena, CA, 5th February 2019: "Sounding Titan's seas" (**Invited**)

- Jet Propulsion Laboratory (JPL), Pasadena, CA, 10th December 2015 : “Sounder data analysis for planetary exploration” (**Invited**)
- Press conference AGU (2014) (**Invited**)
- Press release ESA: Profile of a methane sea on Titan (**Invited**)

### **Awards and Recognitions**

- (2014) Participated in the national television broadcast **TG Leonardo** with a special session on the discovery of the depths of Titan's seas
- (2012) Received the **NASA Group Achievement Award**: MRO SHARAD science team
- (2018) Received the **NASA Group Achievement Award**: Cassini Radar Science and Operations Team.

## **SCIENTIFIC RESEARCH ACTIVITY**

Marco Mastrogiuseppe's research activity is divided into the following main thematic lines:

### **- Design of radar systems for planet exploration**

In this context, Dr. Mastrogiuseppe has participated in the study, development, and implementation of radar systems for the exploration of planets, moons, and asteroids. He has collaborated with the Italian Space Agency (ASI), the European Space Agency (ESA), NASA, and the Jet Propulsion Laboratory (JPL) in the study and design of the Europa Clipper RADAR and RIME for the exploration of Jupiter's moons. He has participated in several proposals for the development of radar systems for asteroid exploration (ARRM proposal), the study of Venus (Envision and VISAR), and other proposals.

### **- Processing of GPR/Sounder data for subsurface exploration**

Dr. Mastrogiuseppe's research include the development of radar signal processing techniques for subsurface mapping and super-resolution algorithms. In this area, Dr. Mastrogiuseppe has developed innovative techniques applied to Martian radar sounders and bathymetric observations of the seas of Titan, Saturn's largest moon.

### **- Inversion of radar data for material investigation**

In this area, Dr. Mastrogiuseppe has developed techniques for inverting altimetric-Sounder data to determine the dielectric properties of the Martian subsurface and the composition of the liquids that make up the seas of Titan.

**SCIENTIFIC PRODUCTION AND BIBLIOMETRIC INDICATORS**

Marco Mastrogiuseppe is the author of:

- 49 articles published in international peer-reviewed journals;
- 60 articles/abstracts published in international conference proceedings.

Based on the content of the Scopus database as of today, the bibliometric indicators of the impact of his scientific production are reported in the following table:

Commonly adopted indicators

Total number of citations:	923
Average number of citations per product:	18.8
Hirsch Index (H):	19



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### **Relevant Publications**

- [J1] Mastrogiuseppe, M., Poggiali V., Hayes A., Lorenz R., Lunine J., Picardi G., Seu R., Flamini E., Mitri G., Notarnicola C., Paillou P., Zebker, H., The Bathymetry of a Titan Sea. *Geophysical Research Letters* (2014).
- [J2] Mastrogiuseppe, M., Poggiali, V., Seu, R., Martufi, R., Notarnicola, C. Titan dunes height retrieval by using Cassini Radar Altimeter. *Icarus* (2014).
- [J3] Mattia Callegari, Domenico Casarano, Marco Mastrogiuseppe, Valerio Poggiali, Claudia Notarnicola. Dune Height Estimation on Titan Exploiting Pairs of Synthetic Aperture Radar Images With Different Observation Angles. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* (2014).
- [J4] Sugata P. Tan, JS Kargel, DE Jennings, Marco Mastrogiuseppe, Hertanto Adidharma, Giles M Marion. Titan's liquids: Exotic behavior and its implications on global fluid circulation. *Icarus* (2015).
- [J5] M.A. Janssen, Alice Le Gall, R.M. Lopes, R.D. Lorenz, M.J. Malaska, A.G. Hayes, C.D. Neish, A. Solomonidou, K.L. Mitchell, J. Radebaugh, S.J. Keihm, M. Choukroun, C. Leyrat, P.J. Encrenaz, M. Mastrogiuseppe. Titan's Surface at 2.18-cm Wavelength Imaged by the Cassini RADAR Radiometer: Results and Interpretations through the First Ten Years of Observation. *Icarus* (2016).
- [J6] R J Michaelides, A G Hayes, M Mastrogiuseppe, H A Zebker, T G Farr, M J Malaska, V Poggiali, J P Mullen. Constraining the physical properties of Titan's empty lake basins using nadir and off-nadir Cassini RADAR backscatter. *Icarus* (2016)
- [J7] S. P. D. Birch, A. G. Hayes, W. E. Dietrich, J. Moore, M. Mastrogiuseppe, O. White, A. D. Howard, M. J., Malaska, R. Kirk, E. Turtle, and J. Barnes. Geomorphology of Titan's polar terrains: Using landscape form to understand surface process. *Icarus* (2016)
- [J8] Valerio Poggiali, Marco Mastrogiuseppe et al., Liquid filled Canyon on Titan. *Icarus*. (2016).
- [J9] Alice Le Gall, R.D. Lorenz, M.J. Malaska, M.A. Janssen, T. Tokano, A.G. Hayes, M. Mastrogiuseppe, Gaëlle Veyssière. Composition, seasonal change and bathymetry of Ligeia Mare, Titan, derived from its 2.2-cm thermal emission. *JGR-Planets* (2016).

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- [J10] Mastrogiuseppe, M., V., Hayes A., M., Poggiali Seu R., Lunine J. Radar Sounding Using Cassini Altimeter: Waveform Modeling and Monte Carlo approach for Data Inversion of Observations of Titan Liquid Bodies. IEEE Transactions on Geoscience and Remote Sensing (2016).
- [J11] Vincent, D.; Karatekin, Ö.; Vallaey, V.; Hayes, A.G.; Mastrogiuseppe, M.; Notarnicola, C.; Dehant, V.; Deleersnijder, E. Numerical study of tides in Ontario Lacus, a hydrocarbon lake on the surface of the Saturnian moon Titan. Ocean Dynamics. 2016, 66, 461-482.
- [J12] Hofgartner, J.D.; Hayes, A.G.; Lunine, J.I.; Zebker, H.; Lorenz, R.D.; Malaska, M.J.; Mastrogiuseppe, M.; Notarnicola, C.; Soderblom, J.M. Titan's "Magic Islands": Transient features in a hydrocarbon sea. Icarus 2016, 271, 338-349.
- [J13] A.G. Hayes, S.P.D. Birch, W.E. Dietrich, A.D. Howard, R.L. Kirk, V. Poggiali, Mastrogiuseppe, M., R J Michaelides et al. Topographic constraints on the evolution and connectivity of Titan's lacustrine basins Bathymetry and composition, Geophysical Research Letters (2017).
- [J14] C. Grima, Mastrogiuseppe, M., A.G. Hayes, et al. Surface Roughness of Titan's hydrocarbon seas. Earth and Planetary Science Letters (2017).
- [J15] Mastrogiuseppe, M., V. Poggiali, A.G. Hayes, J.I. Lunine, R. Seu, G. Di Achille, R.D. Lorenz, Cassini radar observation of Punga Mare and environs: Bathymetry and composition, Earth and Planetary Science Letters, Volume 496, 2018, Pages 89-95, ISSN 0012-821X, <https://doi.org/10.1016/j.epsl.2018.05.033>.
- [J16] Mastrogiuseppe, M., A.G. Hayes, V. Poggiali, J.I. Lunine, R.D. Lorenz, R. Seu, A. Le Gall, C. Notarnicola, K.L. Mitchell, M. Malaska, S.P.D. Birch, Bathymetry and composition of Titan's Ontario Lacus derived from Monte Carlo-based waveform inversion of Cassini RADAR altimetry data, Icarus, Volume 300, (2018).
- [J17] Nixon, C.; Lorenz, R.; Achterberg, R.; Buch, A.; Coll, P.; Clark, R.; Courtin, R.; Hayes, A.; Iess, L.; Johnson, R.; M. Mastrogiuseppe et al. Titan's cold case files-Outstanding questions after Cassini-Huygens. Planet. Space Sci. 2018.

- [J18] Valerio Poggiali, Marco Mastrogiuseppe et al. High-Resolution Topography of Titan adapting the Delay/Doppler Algorithm to the Cassini RADAR Altimeter Data. IEEE Transactions on Geoscience and Remote Sensing, (2019).
- [J19] Mastrogiuseppe, M., V. Poggiali, A.G. Hayes, J.I. Lunine, R. Seu, G. Mitri, R.D. Lorenz, Deep and methane-rich lakes on Titan, Nature Astronomy, 2019.
- [J20] Mastrogiuseppe, M. Dual Frequency Orbiter-Radar System for the Observation of Seas and Tides on Titan: Extraterrestrial Oceanography from Satellite. Remote Sensing. (2019)
- [J21] Lei Y, Raguso MC, Mastrogiuseppe M, Elachi C, Hayes MS, Clutter Detection and Surface/Subsurface Slope Determination by combination of Repeated-Pass Sounder Orbits Applied to SHARAD Data (2022)
- [J22] Raguso MC, Mastrogiuseppe M, R Seu, Validation of a Pseudospectral time-domain (PSTD) planetary radar sounding simulator with SHARAD radar sounding data Determination by combination of Repeated-Pass Sounder Orbits Applied to SHARAD Data (2022)

Pursuant to Law 679/2016 of the Rules of the European Parliament of 27 April 2016, I consent to the processing and use of my data provided in this CV

Roma, 20 April 2024