

STEFANO CARLETTA

Curriculum Vitae ai fini della pubblicazione

Part I – General Information

Full Name	Stefano Carletta
Date of Birth	
Place of Birth	
Citizenship	
Permanent Address	
Mobile Phone Number	
E-mail	
Spoken Languages	Italian (native), English (full proficiency), French (elementary), Russian (elementary)

Part II – Education

Type	Year	Institution	Notes (Degree, Experience,...)
PhD in Astronomy, Astrophysics and Space Science	2020	Sapienza University of Rome and University of Rome Tor Vergata	PhD in Space Science Thesis: New Techniques for Space Science Missions (pertaining to the SSD ING-IND/03) Final Grade: Excellent
Special Master of Aerospace Engineering (Laurea a Statuto Speciale in Ingegneria Aerospaziale)	2016	Sapienza University of Rome	Special Master of Aerospace Engineering, School of Aerospace Engineering Thesis: Numerical and Experimental Validation of Magnetic ACS (pertaining to the SSD ING-IND/03) Final Grade: 110/110 cum Laude
Master of Science (Laurea Magistrale)	2014	Palermo University	Master of Science in Aerospace Engineering (LM-20) Thesis: Visualization and Non-Intrusive Diagnostic of Low-Enthalpy Hypersonic Flows in Wind Tunnel by means of Schlieren and Shadowgraph Techniques Final Grade: 110/110 cum Laude
Bachelor of Science (Laurea)	2012	Palermo University	Bachelor of Science in Mechanical Engineering, Aeronautics profile (L-9) Thesis: Fluid-Dynamic Analysis on a Planning Hull Final Grade: 108/110

Part III – Appointments

IIIA – Academic Appointments

Start	End	Institution	Position
02/2023	02/2034	Italian Ministry of University and Research (MUR)	National Scientific Qualification (Abilitazione Scientifica Nazionale - ASN) as Associate Professor for the disciplinary field (SC) 09/A1 and SSD ING-IND/03
10/2021	Present	Sapienza University of Rome	Research Fellow (Ricercatore Tempo Determinato Tipo A - RTDa) in the SSD ING-IND/03. Project: “Design of guidance and control for micro and nano satellites for observation in the proximity of the Moon”
05/2023	Present	Gran Sasso Science Institute	Member of the PhD board for the PhD program in “Innovative technologies for space missions and radiation detection”
07/2020	10/2020	Sapienza University of Rome	Research Scholarship (Borsa di ricerca) funded by the Italian Space Agency. Project: Debris orbit and attitude determination techniques by means of measurements from CastelGauss Telescope.
10/2018	10/2021	Saveetha Institute of Medical and Technical Sciences	Adjunct faculty at Saveetha School of Engineering for collaboration on trajectory optimization techniques (pertaining to the SSD ING-IND/03)

IIIB – Other Appointments

Start	End	Institution	Position
04/2022	Present	Italian Space Agency (ASI)	Member of the study group “Satellites for Earth observation, navigation and SATCOM” at support of the ASI Scientific and Technical Advisory Committee (Comitato Tecnico Scientifico)
03/2018	Present	International Academy of Astronautics	Member of the Study Group IAA 4.22 “Through Optimization of Aerospace Trajectories”
11/2020	09/2021	GAUSS Srl	Technical consultant. Project: Design of magnetic actuators and microsattellites for interplanetary missions
05/2019	06/2020		
04/2016	07/2016	Morehead State University	Research fellow at the Space Science Center of Morehead State University. Project: Design of attitude control models for CubeSats and development of an air-bearing test facility

02/2015	09/2015	ADECCO Italia Spa – AVIO	Technical consultant for Avio Srl. Project: Support to CAD/CAE activities in the design and test departments
05/2014	07/2014	Italian Aerospace Research Center (CIRA)	Research intern at the Plasma Wind Tunnel division. Project: Development of an experimental facility for the non-intrusive diagnostic of hypersonic flows in the GIBLI Plasma Wind Tunnel

Part IV – Teaching experience

Year	Institution	Lecture/Course
2022/2023	Sapienza University of Rome	Professor in charge (as RTDA) of “Optimal Control and Game Theory in Flight Mechanics” (ING-IND/03, 6 CFU). Course of the Special Master of Aerospace Engineering, provided in English by the School of Aerospace Engineering.
2021/2022		
2020/2021	Sapienza University of Rome	Contract professor (Professore a contratto) of “Optimal Control and Game Theory in Flight Mechanics” (ING-IND/03, 6 CFU). Course of the Special Master of Aerospace Engineering, provided in English by the School of Aerospace Engineering.
2019/2020		
2021/2022	Sapienza University of Rome	Lecturer (Co-docente) of “Aerodynamics of continuous and rarefied flows” (ING-IND/06, 6 CFU). Course of the Special Master of Aerospace Engineering, provided in English by the School of Aerospace Engineering.

Part V – Tutoring and educational activities

Year	Institution	Activity
2022/2023	Sapienza University of Rome	Supervisor of 14 Theses for the Special Master of Aerospace Engineering and Co-Supervisor of 2 Special Master theses and 4 Master Theses in Aerospace Engineering
2021/2022		
2020/2021		
2019/2020		
2022/2023	Camplus College (Collegio Universitario di Merito riconosciuto dal MUR)	Organization of the educational and training program for the Camplus Rocket'n'Roll project. The project is aimed at providing Camplus undergraduate and graduate students with basic knowledge of rocket science and training them in the design, development and testing of a rocket model. By the end of the project, each team develops a rocket model, estimates its trajectory and compares it with the actual one obtained from the navigation sensors data collected during the flight test.
2021/2022		
2021	Sapienza University of Rome	Training course dedicated to the engineers of the DIPA Center for Education and Training Ministry of Research and Technology, Indonesia, concerning the on-board computer implementation of guidance and attitude control algorithms.

2021/2022	Sapienza University of Rome	Tutor for the students of the Special Master of Aerospace Engineering involved in the development of the satellites 6P PocketQube STECCO and 3U ABCS.
2020/2021		
2019/2020		
2018/2019		
2020/2021	Camplus College (Collegio Universitario di Merito riconosciuto dal MUR)	Didactic tutor for subjects in the field of aerospace engineering.
2019/2020		
2018/2019		
2017/2018		
2016/2017	Sapienza University of Rome	Lecturer of the tutorial courses on Dynamical Systems (16 hours) and Matlab Programming (16 hours) dedicated to first year students of the Special Master of Aerospace Engineering.

Part VI - Society memberships, Awards and Honors

Start	End	Institution	Position
2022	Present	Lazio Region	Winner of the Grant PR FSE+ 2021-2027 promoted by the Lazio Region at support of researchers (Contributi premiali per ricercatori e assegnisti di ricerca)
2021	Present	International Academy of Astronautics (IAA)	Corresponding Member of the IAA and Member of Commission 4-Space Operation and Utilization
2019	Present	Elsevier NV	Elsevier Certificated Reviewer
2017	Present	Association of Engineers (Ordine degli Ingegneri) of Rome	Member of the Association and of the Space Exploration Commission
2015	2017	Association of Engineers (Ordine degli Ingegneri) of Caltanissetta	Member of the Association

Part VII – Editor and Reviewer activity

Year	Position
2022	Guest Editor of the Special Issue “Advanced Schemes for Lunar Transfer, Descent and Landing” on the MDPI journal Applied Sciences
2020	Co-Editor of the Volume 173 “Fifth IAA Conference on University Satellite Missions and CubeSat Workshop 2020” of the book series Advances in the Astronautical Sciences published by Univelt
2019 - Present	Reviewer for the journals: Acta Astronautica, Actuators, Advances in Space Research, Aerospace, Automation, Communications in Nonlinear Science and Numerical Simulation, Electronics, Journal of Aerospace Engineering, Journal of Optimization Theory and Applications, Remote-Sensing, Sensors, Universe

Part VIII - Funding Information [grants as PI-principal investigator or I-investigator]

1	2023	Diversity architecture for robust GNSS receiver in launcher applications	I	Research contract (ESA competitive tender involving peer review) – QASCOM	
2	2022	Rapid design of a satellite constellation for Earth observation. (Progettazione rapida di una costellazione satellitare per Earth observation)	I	Research contract – Thales Alenia Space Italia	
3	2022	Dynamics, guidance and control of space vehicles in cislunar space	I	Sapienza Scientific Research Funding (Finanziamenti di ateneo per la ricerca scientifica)	
4	2022	STARTING: Space Technologies addressing research transfer into nowadays generations	I	Sapienza Dissemination Funding (Finanziamenti di ateneo per la Terza Missione)	
5	2022	Design of a 12U CubeSat demonstrator for telecommunication, attitude determination and control and payload control applications	I	Research contract Advanced Radio Access for Military Solutions (ARAMIS), Phase 3 – Italspazio Srl	
6	2022	Technological demonstrator development of a naval rocket launcher ejection system. (Sviluppo di un dimostratore del sistema di estrazione di un lanciatore da una nave.)	I	PNRM SIMONA – Italian Ministry of Defence, Phase 2	
7	2022	Biofilm Onboard Radiation Exposure Assessment Lab In Space (BOREALIS)	I	Research contract – Italian Space Agency, Phase A	
8	2021	Development of simulation and optimization models for ascent, rendez-vous and re-entry trajectories. (Contratto di ricerca per lo sviluppo di modelli di simulazione per l’ottimizzazione di traiettorie di ascesa, rendez-vous e rientro)	I	Research contract – MBDA Italia	
9	2021	Design of guidance and control for micro and nano satellites for observation in the proximity of the Moon	PI	Research contract: Research and technological development of innovative sensors and actuators for remote sensing by means of micro/nano satellites (Ricerca e sviluppo tecnologico di sensori e attuatori innovativi per il telerilevamento mediante micro/nano satelliti) – GAUSS Srl	

10	2021	Research and development of a software for the optimization of ascent, rdv and controlled re-entry trajectories of an airborne launcher injecting into low Earth orbits. (Attività di ricerca e sviluppo per la realizzazione di software per l'ottimizzazione di traiettorie di ascesa, rdv e rientro controllato per un vettore aviolanciato per inserzione in orbita bassa).	I	Research contract – MBDA Italia	
11	2021	On board computer for space applications	I	Research and training contract– DIPA Center for Education and Training Ministry of Research and Technology of Indonesia	
12	2021	Technological demonstrator development of a naval rocket launcher ejection system. (Sviluppo di un dimostratore del sistema di estrazione di un lanciatore da una nave.)	I	PNRM SIMONA – Italian Ministry of Defence, Phase 1	
13	2021	Design of CubeSat formations for ELINT applications and design of the platforms.	I	Research contract Advanced Radio Access for Military Solutions (ARAMIS), Phase 2 – Italspazio Srl	
14	2020	Analysis of the Earth – Mars transfer trajectory and of the deployment strategies. (Studio della traiettoria di trasferimento tra Terra e Marte e della strategia di deployment)	I	ESA Mars Comms/Nav – Argotec Srl	
15	2020	Orbit and attitude determination of space debris based on measurements from the CastelGauss telescope (Borsa di ricerca Senior su: "Tecniche di determinazione orbitale e di assetto di detriti mediante misure dal Telescopio CastelGauss)	I	ASI-INAF 2020-6HH.0 “Detriti Spaziali – Supporto alla attività IADC e SST 2019-2021 – Italian Space Agency	
16	2020	Design of a CubeSat constellation for IoT/ELINT applications and design of the platforms.	I	Research contract Advanced Radio Access for Military Solutions (ARAMIS), Phase 1 – Italspazio Srl	
17	2019	CubeSat 3U AstroBio	I	Implementation agreement (Accordo attuativo) 2019-30-h.0 – INAF, ASI	
18	2019	Design of a microsatellite constellation for SAR applications and of the microsatellite platforms	I	Micro-Satellite Cluster II (MIRACLE II) – European Defence Agency	

19	2019	Nonlinear Control Techniques for aerospace Vehicles in Challenging Mission Scenarios	I	Sapienza Scientific Research Funding (Finanziamenti di ateneo per la ricerca scientifica)	
20	2018	Numerical and experimental investigation of biopolymers-based hybrid propulsion	I	Sapienza Scientific Research Funding (Finanziamenti di ateneo per la ricerca scientifica)	
21	2016	PhD fellowship (Borsa di studio per il dottorato di ricerca)	PI	PhD Program in Astronomy, Astrophysics and Space Science – Sapienza University of Rome	

Part IX – Research Activities

The research activities hereafter reported are organized according to the topics included in the paragraphs “Attività di ricerca prevista” of the call 2023RTTA019. The number indicated for referenced publications and fundings corresponds to the item number in the lists of, respectively, section XIII and VIII of this document.

Keywords	Brief Description
N-body problem	<p>Space trajectories in N-body systems</p> <p>Aiming at developing novel and effective solutions for the autonomous exploration of the solar system, the candidate has investigated space trajectories existing in the complex N-celestial body systems, modelled in the dynamical frameworks of the circular restricted 3-body problem (Ref publications Sec XIII: 4, 7, 11) and of the elliptic restricted 3-body and 4-body problem (Ref publications Sec XIII: 9, 14, 26). These studies led to (i) the topological characterization of stable low-energy capture trajectories (ii) of the osculating orbital elements at capture, and (iii) the development of minimum-energy/-propellant low-thrust guidance strategies to adjust the parameters of the low-energy trajectories or transferring a spacecraft from a high-energy trajectory to a low-energy one. These solutions have been developed to (iv) respond to the constraints of actual on-board systems and verified modelling their real behaviour and high-fidelity orbit propagators, with particular focus on nano-/micro-satellite missions, characterized by limited performance of the guidance, navigation, attitude control and power systems and (v) the extensive use of rideshare launch opportunities (Ref publications Sec XIII: 16, 18-19, 33). Multi-satellite systems have been investigated as well, specifically with the intent of (vi) characterizing bounded configurations stable under the effects of the zonal harmonic perturbation and (vii) developing single-launch deployment strategies for satellite constellations (Ref publications Sec XIII: 27, 36, 37). (See also fundings Sec VIII: 3, 14, 16, 21).</p>
Low-energy trajectories	
Multi-satellite systems	
Low-thrust propulsion	
Magnetic attitude determination and control	<p>Design, development and experimental testing of guidance and control systems for small satellites</p> <p>The research on guidance and attitude control systems addressed solutions for small satellites, including: (i) the design of magnetic attitude determination and control systems (ADCS) for nano-/micro-satellites, (ii) the development of autonomous optimal guidance and control schemes for lunar landing, (iii) the design of an attitude control and desaturation scheme</p>
Lunar landing G&C schemes	
Coupled guidance and attitude control	

Hardware-in-the-loop testing of G&C actuators	<p>for 6U CubeSats for deep space exploration (i.e. developed at Morehead State University for possible application to the Lunar Ice Cube mission), (iv) the design of actuators for VLEO station-keeping and satellite formation-flying based on field emitter array and superconductors, (v) the development and validation (from flight data of the 6P PocketQube STECCO) of an attitude determination model based on satellite laser ranging, (vi) the implementation and validation of modulation schemes of reduced attitude control for orbit injection (Ref publications Sec XIII: 6, 12-13, 21, 23, 25, 29, 32, 38), and (vii) the development of a position-based accurate single-sensor attitude determination system to be patented. For suitable cases, ADCS were tested experimentally on-ground using a facility designed by the candidate. The facility allows recreating the microgravity and magnetic conditions experienced in orbit and includes testbeds equivalent to 3U/6U/12U CubeSats equipped with space-qualified hardware (on-board computer, magnetic actuators, attitude sensors, telecommunication system). The testbeds can be programmed with desired ADCS algorithms to evaluate their effectiveness and performance in a relevant environment before the mission. The facility has been used to: (a) validate an active ADCS of the 12U CubeSat ARAMIS, (b) characterize the hysteresis magnets and validate the performance of the passive magnetic systems of the 3U AstroBio CubeSat, (c) characterize an innovative viscous spin-damper and (d) validate the magnetometer-only attitude determination algorithm designed for the 6P PocketQube STECCO (Ref publications Sec XIII: 2, 8, 10, 20, 34). (See also fundings Sec VIII: 5, 9, 11, 15, 17, 19).</p>
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SIMONA launch system	<p>Analysis and experimental testing of launch and re-entry systems</p>
Rocket landing	
Experimental testing of launch and re-entry systems	
<p>The candidate's studies on launch systems have been devoted to the identifications of solutions that can simplify the access to space. The activity includes: (i) the design, prototype realization and experimental validation of the SIMONA micro-launcher eject system from naval platform, (ii) the design and numerical validation of an optimal aerodynamic-driven vertical landing strategy for rocket stages and (iii) the design of optimal ascent and controlled re-entry trajectories of airborne launchers (Ref publications Sec XIII: 28, 30-31). Part of these activities were supported by the Italian ministry of defence and private companies in the field. As a research intern at the Italian Aerospace Research Centre (CIRA), the candidate (iv) implemented a Schlieren/Shadowgraph diagnostic system (currently available at CIRA Plasma Wind Tunnel laboratories) that is suitable for the aerodynamic characterization of launch and re-entry vehicles and (v) was involved in the experimental testing and data analysis of the thermal protection system for the re-entry vehicle ESA IXV (Ref publications Sec XIII: 1, 3, 5). (See also fundings Sec VIII: 6, 8, 9, 12, 20)</p>	

Space science missions	<p>Design of nano-/micro-satellites platforms and missions</p>
CubeSat	
PocketQube	
Microsatellite	
<p>To current date, the candidate has been involved in 10 nano-/micro-satellite missions (Ref publications Sec XIII: 12-13, 5-17, 20-21, 24, 34-35, 39). Two of these missions are currently under development: (i) BOREALIS (6U CubeSat) and ARAMIS (12U CubeSat formation), funded by, respectively, the Italian Space Agency (ASI) and the Italian ministry of defence. For both the missions, the candidate has provided support for the</p>	

mission analysis and the design, development and experimental testing of the ADCS. Five more satellite missions are currently operating in-orbit or concluded: (iii) ArgoMoon (6U CubeSat) and (iv) AstroBio CubeSat (3U CubeSat), both funded by ASI, for which the candidate contributed in (iii) implementing an alternative mission profile to establish lunar capture and (iv) the design of the mission profile and the design, characterization and testing of the passive magnetic attitude control system; (v) UNISAT-7 (30 kg microsatellite) by GAUSS Srl, for which the candidate selected the ADCS and provided mission analysis for minimum-time orbit rise using low-thrust propulsion; (vi) STECCO (6P PocketQube), an educational and scientific satellite developed by the students, researchers and professors of the School of Aerospace Engineering, in which the candidate was responsible for the integration and testing, and development of attitude determination and control payload, as well as mission analysis; (vii) CXBN-2 (2U CubeSat) by Morehead State University (MSU) for which the candidate developed a purely magnetic ADCS during his research at the Space Science Center of MSU. Finally, the candidate has been involved in the early design phase of three more missions: (viii) ESA Mars Comm/NAV (Microsatellite formation) by Argotec Srl, (ix) Moon-Mars-Mission by GAUSS Srl (100 kg microsatellite), in which the candidate designed the Earth-Mars transfer and the deployment strategies, and (x) MIRACLE-2 (microsatellite constellation/formation) for which the candidate provided the concept design of the constellation and of the satellite platforms. (See also fundings Sec VIII: 5, 7, 13, 16-18)

Part X – Summary of Scientific Achievements

Product type	Number	Data Base	Start	End
Article	12	Scopus	2018	2023
Conference Paper	14	Scopus	2018	2023
Book Chapter	1	Scopus	2018	2023

Total Impact factor**	27.202
Average Impact Factor**	2.473
Total Citations	122 (80 for Articles, 42 for Conference Papers)
Average Citations per Article	6.7 (80/12)
Average Citations per Product	4.5 (122/27)
Hirsch (H) index	8
Normalized H index*	1.6

* H index divided by the academic seniority.

** Computed from Journal Citation Reports (see Part XIII for IF of each item)

Part XI – Selected Publications

The list of selected publications presented for the evaluation is reported below. The number reported for each document corresponds to the ID number of the corresponding pdf file collected in the zip folder “7.Carletta_publicazioni_selezionate”. A copy of the list is reported in the attached document “5. Carletta_Elenco_publicazioni_selezionate”. For each publication it is reported the authors, title, reference data, journal IF (if applicable), citations, press/media release (if any).

- 7.1. Carletta S., Teofilatto P., Design and Numerical Validation of an Algorithm for the Detumbling and Angular Rate Determination of a CubeSat Using Only Three-Axis Magnetometer Data, *International Journal of Aerospace Engineering*, 2018. **IF:** 1.131, **SJR:** 0.290, **Cit:** 12
- 7.2. Carletta S., Pontani M., Teofilatto P., Long-term capture orbits for low-energy space missions, *Celestial Mechanics and Dynamical Astronomy*, 130(46), 2018. **IF:** 1.837, **SJR:** 0.781, **Cit:** 13
- 7.3. Carletta S., Pontani M., Teofilatto P., Dynamics of three-dimensional capture orbits from libration region analysis, *Acta Astronautica*, 165, 2019, 331-343. **IF:** 2.833, **SJR:** 1.065, **Cit:** 13
- 7.4. Farissi M.S., Carletta S., Nascetti A., Teofilatto P., Implementation and hardware-in-the-loop simulation of a magnetic detumbling and pointing control based on three-axis magnetometer data, *Aerospace MDPI*, 6(12), 133, 2019. **IF:** N/A (2.807¹), **SJR:** 0.322, **Cit:** 9
- 7.5. Carletta S., Teofilatto P., Farissi M.S., A magnetometer-only attitude determination strategy for small satellites: Design of the algorithm and hardware-in-the-loop testing, *Aerospace MDPI*, 7(1), 3, 2020. **IF:** 1.659, **SJR:** 0.473, **Cit:** 18
- 7.6. Graziani F., Sparvieri N., Carletta S., A low-cost Earth-Moon-Mars mission using a microsatellite platform, *Proceedings of the 71st international astronomical congress (IAC) - The CyberSpace Edition*, 12-14 October 2020, Virtual, Online. **IF:** N/A (0.236¹), **SJR:** 0.190, **Cit:** 9
- 7.7. Carletta S., Design of fuel-saving lunar captures using finite thrust and gravity-braking, *Acta Astronautica*, 181, 2021, 190-200. **IF:** 2.954, **SJR:** 1, **Cit:** 9
- 7.8. Pontani M., Celani F., Carletta S., Lunar descent and landing via two-phase explicit guidance and pulse-modulated reduced attitude control, *Proceedings of the AIAA SciTech Forum 2022*, 3-7 January 2022, San Diego, USA. **IF:** N/A, **SJR:** N/A, **Cit:** 1
- 7.9. Carletta S., Pontani M., Teofilatto P., Characterization of low-energy quasiperiodic orbits in the elliptic restricted 4-body problem with orbital resonance, *Aerospace*, 9(4), 2022. **IF:** 2.660, **SJR:** 0.526, **Cit:** 3
- 7.10. Carletta S., Nascetti A., Gosikere Matadha S.S., Iannascoli L., Baratto de Albuquerque T., Maipan Davis, N., Schirone L., Impresario G., Pirrotta S., Brucato J.R., Characterization and testing of the passive magnetic attitude control system for the 3U AstroBio CubeSat, *Aerospace*, 9(11), 2022. **IF:** 2.660, **SJR:** 0.526, **Cit:** 1
- 7.11. Carletta S., Dynamics and control of satellite formations invariant under the zonal harmonic perturbation, *Applied Sciences*, 13(8), 2023. **IF:** 2.838, **SJR:** 0.492, **Cit:** 0
- 7.12. Carletta S., A single-launch deployment strategy for lunar constellations, *Applied Sciences*, 13(8), 2023. **IF:** 2.838, **SJR:** 0.492, **Cit:** 0

Part XII– Titles and attached documents included for the evaluation

The list of titles/attached document presented for the evaluation is reported below. The number reported for each title/document corresponds to the ID number of the corresponding pdf file collected in the zip folder “6.Carletta_titoli_valutazione”. A copy of the list with more details on each title presented is reported in the attached document “4.Carletta_elenco_titoli_presentati”.

6.1_Carletta_PhD_Certificate: PhD certificate from Sapienza University of Rome

¹ Impact Factor (IF) for this item/year is not available on Journal Citation Reports (<https://clarivate.com/products/scientific-and-academic-research/research-analytics-evaluation-and-management-solutions/journal-citation-reports/>). The IF (Total Citations in the reference year / Total Documents in the 2 years before) was computed according to the data reported in Scimago (<https://www.scimagojr.com/>)

- 6.2_*Carletta_PhD_Thesis*: PhD thesis titled “New Techniques for Space Science Missions”
- 6.3_*Carletta_PhD_Thesis_IRISCert*: PhD thesis Tab from the IRIS research product catalogue indicating for the document the SSD ING-IND/03
- 6.4_*Carletta_ASI_GruppoDiLavoro*: Appointment letter as member of the study group “Satelliti di Osservazione della Terra, Navigazione e SATCOM” at support of the ASI Scientific and Technical Advisory Committee (CTS)
- 6.5_*Carletta_IAA_SG422*: Appointment letter for the “Study Group 4.22 on Through Optimization of Aerospace Trajectories” by the International Academy of Astronautics (IAA)
- 6.6_*Carletta_Saveetha_AdjunctFaculty*: Appointment letter as “Adjunct Faculty” from Saveetha School of Engineering at Saveetha Institute of Medical and Technical Sciences
- 6.7_*Carletta_Teaching_2020*: Extract from the minutes of the School of Aerospace Engineering (SIA) council in which the candidate is appointed contract professor for the course Optimal Control and Game Theory in Flight Mechanics (6 CFU, SSD ING-IND/03) for the academic year 2019/2020
- 6.8_*Carletta_Teaching_2021*: Extract from the minutes of the SIA council in which the candidate is appointed contract professor for the course Optimal Control and Game Theory in Flight Mechanics (6 CFU, SSD ING-IND/03) for the academic year 2020/2021
- 6.9_*Carletta_Teaching_2022*: Extract from the minutes of the SIA council in which the candidate is appointed professor in charge for the course Optimal Control and Game Theory in Flight Mechanics (6 CFU, SSD ING-IND/03) for the academic year 2021/2022
- 6.10_*Carletta_Teaching_2023*: Extract from the minutes of the SIA council in which the candidate is confirmed professor in charge for the course Optimal Control and Game Theory in Flight Mechanics (6 CFU, SSD ING-IND/03) for the academic year 2022/2023
- 6.11_*Carletta_CoTeaching_2022*: Cover letter by the professor in charge of the course Aerodynamics of Continuous and Rarefied Flows (6 CFU, SSD ING-IND/06) indicating that the candidate was lecturer for part of the course in the academic year 2021/2022
- 6.12_*Carletta_Conferences*: List of presentations at international conference
- 6.13_*Carletta_IAA_Certificates*: Appointment letter and diploma as Corresponding Member of the International Academy of Astronautics
- 6.14_*Carletta_FSE2127_List*: List including the candidate among researchers awarded by the grant PR FSE+ 2021-2027 promoted by the Lazio Region
- 6.15_*Carletta_EditorAAS_CoverLetter*: Cover letter by the Editor-in-Chief of the Volume 173 of the book series Advances in the Astronautical Sciences edited by Univelt Inc.
- 6.16_*Carletta_EditorAppSci_Certificate*: Certificate of activity as guest editor for the special issue “Advanced Schemes for Lunar Transfer, Descent and Landing” on the journal Applied Sciences by MDPI
- 6.17_*Carletta_Reviewer*: Collection of reviewer certificates
- 6.18_*Carletta_Satellite_Missions*: Summary of micro-/nano-satellite missions in which the candidate has been involved

6.19_Carletta_ASN_Certificate: National Scientific Qualification as associate professor (Abilitazione Scientifica Nazionale-ASN alle funzioni di professore universitario di seconda fascia) Certificate for the disciplinary field (SC) 09/A1

6.20_Carletta_ASN_ApplicationSSD: Extract from the application to the ASN in which is indicated the SSD ING-IND/03 for the candidate

6.21_Carletta_LaureaSpeciale_Certificate: Special Master degree certificate

6.22_Carletta_RTDA_Contract: Contract signed for the position “Ricercatore a tempo determinato di tipologia A (RTDA)” for the disciplinary field (SC) 09/A1 and SSD ING/IND-03

6.23_Carletta_Fellowship_Contract: Contract for the fellowship Debris orbit and attitude determination techniques by means of measurements from CastelGauss Telescope

6.24_Carletta_GaussResearch_CoverLetter: Cover letter by GAUSS Srl CEO indicating the candidate activity at support of the company

6.25_Carletta_SSC_CoverLetter: Cover letter by Prof. Dr. Benjamin Kevin Malphrus, director of the Space Science Center at Morehead State University (Morehead, KY, USA)

6.26_Carletta_CIRA_CoverLetter: Cover letter by engineer Carlo Purpura, tutor of the candidate during the traineeship at the Italian Aerospace Research Centre (CIRA)

6.27_Carletta_CAMPLUS_CoverLetter: Cover letter by the directors of Camplus College Roma Pietralata

6.28_Carletta_ResearchContracts_Activity: List of research projects in which the candidate has been involved

6.29_Carletta_altra_didattica: List of other teaching activities at university level

Part XIII– Complete List of Publications

1. Purpura C., Trifoni E., Carletta S., D'Auria F., Barrera F.P., Design of a Schlieren system for low enthalpy hypersonic flow visualization in GHIBLI facility and development of image processing and quantitative analysis codes with preliminary application to sonic free jet, Proceedings 10th Pacific symposium of flow visualization and image processing, 15-18 June 2015, Naples, Italy. **IF:** N/A, **SJR:** N/A.

2. Carletta S., Teofilatto P., Design and development of a full 5-DOF testbed for testing nanosatellites formation flying, rendezvous and proximity operations, Proceedings 9th International Workshop on Satellite Constellations and Formation Flying, 19-21 June 2017, Boulder (CO), USA. **IF:** N/A, **SJR:** N/A.

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Part XIV – List of conference presentations

A list of conferences at which the candidate participate as speaker is reported below, indicating the title of the presentation, the conference name, date and location. A copy of the list is reported in the attached document “6.12_Carletta_Conferences”.

1. “Design and Development of a Full 5-DOF Testbed for Testing Nanosatellites Formation Flying, Rendezvous and Proximity Operations” presented at the 9th International Workshop on Satellite Constellations & Formation Flying, 19-21 June 2017, Boulder (CO), USA
2. "Long-Term Capture Orbits for Low-Energy Space Missions " presented at CELMEC VII – The seventh international meeting on celestial mechanics, 3-9 September 2017, San Martino al Cimino (VT), ITA

3. "Dynamics of capture orbits from libration region analysis" presented at the 69th International Astronautical Congress (IAC), 1-5 October 2018, Bremen, GER
4. "Ballistic and powered capture of asteroids in the Sun-Earth-Moon system" presented at the 10th Young Researcher Meeting, 18-21 June 2019, Roma (RM), ITA
5. "Deorbiting of microsattellites using compact electrodynamic actuators for space debris mitigation" presented at the 1st IAA Regional Symposium on Space Debris Observation from Basilicata, 9-10 July 2019, Castelgrande (PZ), ITA
6. "Design of Low-Energy Capture trajectories in the Elliptic Restricted Four-Body Problem" presented at the 70th International Astronautical Congress (IAC), 21-25 October 2019, Washington DC, USA
7. "Design and Hardware-in-the-Loop Test of an Active Magnetic Detumbling and Pointing Control based only on Three-Axis Magnetometer Data" presented at the 70th International Astronautical Congress (IAC), 21-25 October 2019, Washington DC, USA
8. "Station-Keeping about Sun-Mars Three-Dimensional Quasi-Periodic Collinear Libration Point Trajectories" presented at the 5th IAA Conference on University Satellite Missions and CubeSat Workshop, 28-31 January 2020, Roma (RM), ITA
9. "A low-cost Earth-Moon-Mars mission using a microsattellite platform" presented at the 71st International Astronautical Congress (IAC) - The CyberSpace Edition, 12-14 October 2020
10. "Implementation and testing of a passive magnetic attitude control system for the 3U AstroBio CubeSat orbiting in the Van Allen belt" presented at the 72nd International Astronautical Congress (IAC), 25-29 October 2021, Dubai, UAE
11. "Earth-Mars microsattellite missions using ballistic capture and low-thrust propulsion" presented at the 72nd International Astronautical Congress (IAC), 25-29 October 2021, Dubai, UAE
12. "Stable configurations for bounded satellite formation flying in the presence of gravitational perturbations" presented at the 11th International Workshop on Satellite Constellations and Formation Flying, 7-10 June 2022, Milano (MI), ITA
13. "Characterization of a flux-pinning interface for the control of nanosatellites in very close proximity" presented at the 73rd International Astronautical Congress (IAC), 18-22 September 2022, Parigi, FRA