

Lorenzo Martinazzoli

Curriculum Vitae

Str. di Valle Montanara 15, 05035 Narni (TR)

Date and place of birth: 11/07/1998

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EDUCATION

Sept 2021 - Jan
2025

Msc in Space and Astronautical Engineering

Thesis: "Non-linear buckling analysis of collapsible tubular masts"

"La Sapienza" University of Rome.

Graduation Date: 21/01/2025

Grade: 103/110

Sept 2017 - May
2021

Bachelor in Aerospace Engineering

Thesis: "An overview of the LLDN network: general description and adaptation to the VEGA messaging"

"La Sapienza" University of Rome.

Graduation date: 24/05/2021

Grade: 98/110

Sept 2012 - Jun
2017

High School Diploma

Scientific High School "Galileo Galilei", Terni

Graduation Date: 30/06/2017

Grade: 90/100

MASTER THESIS

Apr 2024 - Jan
2025

Title: "Non-linear buckling analysis of collapsible tubular masts"

Thesis description:

The thesis was focused on linear and non-linear analysis of the buckling behavior of deployable structures for satellite applications. Such structures, called Collapsible Tubular Masts (CTMs), are made of ultra-thin composite materials, improving flexibility properties. The aim of these structures is to deploy and keep in tension large-scale solar sails for propulsion systems. The thesis research consisted in the experimental characterization of ultra-thin carbon fiber reinforced polymers for the extrapolation of the ABD matrix. This was achieved through a tuning of the material properties obtained by the Classical Laminate Theory (CLT) with the components A_{11} , A_{12} and D_{11} defined experimentally. Full-scale boom buckling analysis with the Finite Element software Abaqus was then performed, to study its critical load and collapse behavior. Subsequently, a three-dimensional solar sail system was modeled and the sail tensioning process was simulated and optimized, evaluating boom performances.

PROFESSIONAL ACTIVITIES

**May 15, 2025 -
Oct 31, 2025**

Fellowship at Department of Astronautical, Electrical and Energetic Engineering (DIAEE), SASLAB Laboratory, "La Sapienza" University of Rome – Borsa di studio

Research Topic: *Development of In-space manufacturing technologies.* Development of additive manufacturing processes for the production of structural components and their mechanical and thermal characterization under a representative simulated environment.

**Apr 2024 - Jan
2025**

Master thesis activity at Department of Astronautical, Electrical and Energetic Engineering (DIAEE), SASLAB Laboratory, "La Sapienza" University of Rome

Experimental and numerical study on extensible boom structures for solar sail deployment simulations.

**Sept 2024 - Oct
2024**

Site inspection activity at "Bambino Gesù" Pediatric Hospital, Palidoro Hospital Facility, Rome

Collaboration with Seip s.r.l. for the site inspection and feasibility study of renewable energy sources implementation.

**Feb 2021 - May
2021**

Bachelor thesis activity

Comparison of the wireless LLDN ("Low Latency Deterministic Network") with actual wired communication system of the VEGA launcher internal messaging.

2009 - 2017

Professional swimming athlete

Participation in regional and national competitions

LANGUAGES

Italian Mother tongue

English Professional

PUBLICATIONS

- 2024** Proietti Mancini, E., Palmeri, F., Tortorici, D., Laurenzi, S., Martinazzoli, L. (2024). *Nanosilica-based composites for space durability. IAF Materials and structures symposium, Session: Space Environmental Effects and Spacecraft Protection. 75th International Astronautical Congress, 2024.*
- 2025** Laurenzi, S., Martinazzoli, L., Palmeri, F. (2025). *Manufacturing process for large space structures and supporting long-duration human space mission.* In Proceedings of the 24th International Conference on Composite Materials (ICCM24).
- 2025** Laurenzi, S., Martinazzoli, L., Palmeri, F. (2025). *Design and prototyping of composite deployable booms for solar sails.* In proceedings of the 24th International Conference on Composite Materials (ICCM24).

SEMINARS AND CONFERENCES

- Apr 2020** Seminar participation: Metodi e strumenti di calcolo per l'analisi multi-body e multidisciplinare (MSC Adams - MSC Institute of Technology)
- Dec 1-4, 2025** Conference Participation: 28th AIDAA International Congress and the 10th CEAS Aerospace Europe Conference - Turin

TECHNICAL SKILLS

Proficient with

Matlab (MathWorks)
Abaqus FEA (Dassault Systèmes)
Inventor, Fusion 360 (Autodesk)
Microsoft Office tools
LaTeX
Ultimate Cura (Ultimaker 3D printer software)
TrapeziumX (Schimadzu testing machine software)
Istra4D (Dantec Digital Image Correlation system software)
Ultimaker 3 (FFF 3D printer)
Schimadzu AGS-X 10KN testing machine
Dantec DIC (Digital Image Correlation) system
MPM Instruments MV/40-PID vacuum oven
THINKY Mixer ARE-250

Intermediate knowledge of

Autocad (Autodesk)
MSC Adams (Hexagon)

SOFT SKILLS

Teamwork
Problem solving
Good communication
Work organization