

EDUCATION AND TRAINING

2022 – 2024 Rome, Italy SPACE AND ASTRONAUTICAL ENGINEERING MASTER'S DEGREE Sapienza Università di Roma

Key courses: Space Constructions, Multibody Space Structures, Aerospace Materials and Technology, Spacecraft Design, Space Missions and Systems, Space Guidance and Navigation Systems.

During my master's studies, I gained expertise in key aerospace disciplines, including structural analysis, telecommunications and propulsion. My thesis focused on the design of Large Deployable Reflectors (LDR) as part of a collaboration between Sapienza DIMA and Thales Alenia Space Italia, where I contributed to the mesh implementation in the form-finding procedure and developed linear and nonlinear finite element methods to identify the reflector's unstressed configuration. This experience allowed me to deepen my knowledge of finite element methods for complex structures, as well as advanced programming through extensive use of MATLAB. Additionally, I enhanced my understanding of thermal and statistical analysis and developed essential professional skills, such as teamwork, autonomous work, meeting deadlines, report and paper writing, and structured team activities.

Website https://www.uniroma1.it/it/pagina-strutturale/home | Field of study Engineering, manufacturing and construction |

Final grade 104 | **Level in EQF** EQF level 7 | **Thesis** Finite Element-Based Form Finding of Large Deployable Mesh Reflectors

2017 – 2021 Rome, Italy AEROSPACE ENGINEERING BACHELOR DEGREE Sapienza Università di Roma

Website https://www.uniroma1.it/it/pagina-strutturale/home | Level in EQF EQF level 6

DIGITAL SKILLS

Digital Skills - Test Results

F Information and data literacy ADVAN	CED L	_evel 6 / 6
Be Communication and collaboration ADVAN	CED L	_evel 6 / 6
© Digital content creation ADVAN	CED L	_evel 6 / 6
Safety ADVAN	CED L	_evel 6 / 6
Problem solving ADVAN	CED L	_evel 6 / 6

Results from self-assessment based on The Digital Competence Framework 2.1

My Digital Skills

Matlab/Simulik | Video Conferencing (Zoom, Teams, Skype, Webex) - Advanced | Ability to work in a team and autonomously | Fusion-360 | Solid Edge | Basic knowledge of Orbitron | SAOImageDS9 (Basic)

LANGUAGE SKILLS

Mother tongue(s): ITALIAN

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production		
ENGLISH	C1	C1	B2	B2	C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PUBLICATIONS

2024

Optimizing The Design Of Large Deployable Mesh Reflectors In Presence Of Manufacturing Defects

Abstract: Large Deployable Reflector (LDR) antennas and in particular mesh reflectors, have known an increasing demand for space applications in recent years. Once deployed, they exhibit considerable flexibility and are characterized by strong geometric nonlinearity featuring a large sensitivity to variations in cable lengths. Consequently, even minor manufacturing and assembly errors in cable lengths can lead to a degradation of the surface accuracy. This paper aims at developing a robust optimal design strategy for mesh reflectors, mitigating the negative effects on reflector surface precision caused by the unavoidable discrepancies in cable lengths during manufacturing. The proposed approach exploits the linearity of Force Density Method (FDM)-based equilibrium equations, deriving the static shape of the antenna after the introduction of design variations based on the Monte Carlo method. This approach allows to identify effective and stable optimal designs capable to grant the required performances in presence of manufacturing and assembly errors.

G. Labella, E. Sicolo, F. Argentesi, S. Atek, M. Pasquali, P. Gaudenzi, Proceedings of ECSSMET 2024