



PERSONAL INFORMATION

Name **Virginia Pietrosanti**

Date of birth 10 October 1998

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Nationality Italian

Gender Female

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WORK EXPERIENCE

[01/11/2022 - present]
Industrial Doctoral Scholarship at the Doctoral School “Materials for Health, Environment and Energy” (University of Rome “Tor Vergata”), co-financed by Thales Alenia Space.
The PhD research activity aims at the study of the irradiation effects on electronic components by means of optical and neutron probes. The characterization and validation of materials and methods for radiation shielding of electronic and photonic components (such as Commercial Off-The-Shelf – COTS) are studied to enable their deployment into avionics and space application in Low Earth Orbit missions. The PhD project is carried out within the collaborative effort with the co-financing industrial partner Thales Alenia Space Italia, along with the access to ISIS@MACH ITALIA (IM@IT) and ISIS Neutron and Muon Source (UK) research infrastructures.

[17/01/2023 – present]
Tutoring activity for the Physics course of the Bachelor’s Degree in Biotechnology, held by Professor Carla Andreani at the University of Rome “Tor Vergata”, for the Academic Years 2022/23 and 2023/24.

EDUCATION AND TRAINING

[01/11/2022 – present]
Industrial Doctoral Scholarship at the Doctoral School “Materials for Health, Environment and Energy” (University of Rome “Tor Vergata”), co-financed by Thales Alenia Space.
Thesis title (temporary): *“Development and characterization of shielding for electronic and photonic components for space environment”*, Supervisor: Prof. Carla Andreani.

[14/01/2021 – 25/10/2022]
Master’s Degree in Physics
University of Rome “Tor Vergata”
Thesis title: *“Signal analysis from scintillation detectors: neutron/gamma discrimination and irradiation of electronics”*, Supervisor: Prof. Roberto Senesi, Co-supervisors: Dr. Enrico Preziosi, Dr. Giovanni Romanelli.
Final grade: 110/110 cum Laude.

[28/09/2017 – 18/12/2020]
Bachelor’s Degree in Physics
University of Rome “Tor Vergata”
Thesis title: *“Reflectance Anisotropy Spectroscopy measurements on samples of Gallium-*

Arsenide-Bismuth alloys, Supervisor: Prof. Claudio Goletti.
Final grade: 101/110.

[15/09/2012 – 11/07/2017]

High School Diploma

Scientific High School "Ascanio Landi" (Velletri, RM)

Final grade: 100 cum Laude.

RESEARCH ACTIVITY

Professional Experience abroad at the "ISIS Neutron and Muon Source" (UK) research infrastructure:

- [31/01/2024 – 14/03/2024]
Visiting at the Rutherford Appleton Laboratory (RAL), ISIS Neutron and Muon Source (UK), to participate in the activities of the project "Study and experimental work with the irradiation group at ISIS" at the Chiplr beamline. Rescheduling of RB2300038¹ ("*Irradiation of SiC MOSFET devices over extended range of voltage supplies to monitor residual stress effects*") experiment at the Chiplr beamline.
- [20/06/2023 – 02/08/2023]
Visiting at the Rutherford Appleton Laboratory (RAL), ISIS Neutron and Muon Source (UK), to perform two experiments and participate in the activities of the project "Study and experimental work with the irradiation group at ISIS". The first experiment (RB2255007, "*Neutron irradiation assessment of the eIMU MEMS Inertial Measurement Unit*"), in collaboration with Thales Alenia Space Italia and Northrop Grumman, involved the irradiation of an inertial system for the control of the orbit of small satellites, by means of fast neutrons at the Chiplr beamline. The second experiment (RB2300038¹, "*Irradiation of SiC MOSFET devices over extended range of voltage supplies to monitor residual stress effects*"), carried out at the Chiplr beamline in collaboration with ST Microelectronics, involved the irradiation of SiC MOSFET devices over extended range of voltage supplies to monitor residual stress effects.
- [09/01/2023 – 12/01/2023]
Participation in experiment RB2220523 ("*Energy and count-rate calibration of Gamma-Flash neutron detectors*") at the NILE beamline, whose object was the irradiation of neutron detectors (i.e., photomultiplier tubes with scintillators) and related power supply by means of a neutron flux.
A continuation of this work is planned with experiment RB2310577 ("*Shielding of the Electronic Components of the 'Gamma-Flash' Neutron Detectors to Reduce Irradiation-related Effects on Data Acquisition*"), which proposal has been approved¹. The goal will be to define shielding materials (plastics containing neutron absorbers) for PMTs and power supply able to reduce and possibly prevent effects due to neutron irradiation.
- [20/07/2022 – 24/07/2022]
Participation in experiment RB2210262 on the Chiplr beamline, which I presented and had approved on a proposal made as a result of my work of Master's Degree Thesis. The experiment was based on the irradiation of neutron detectors and their relative power supply by means of a neutron flux, with the consequent evaluation of the effects on the components. I contributed to the experimental proposal, prepared the experiment from a technical point of view, carried out the data collection and the following analysis. The obtained results have been published ("Publications" section).

¹Experimental proposals submitted to ISIS Neutron and Muon Source and approved:
<https://drive.google.com/drive/folders/1qLXWorjRbQprC2X2tupqDolzpk8c6tN1?usp=sharing>

TRAINING ACTIVITIES

[02/10/2023 – present]

Collaboration with Thales Alenia Space Italia at the Rome branch. The activities included the updating of Radiation Design Hardness (RDH) file and the calculation of simulated SEU (Single Event Upset) rate in-orbit for a satellite mission by means of TAS' software and tools.

[06/11/2023 – 10/11/2023]

Participation in the **VIU International PhD Academy** "*Preserving and Safeguarding the Beauty of Cultural Heritage: Fundamentals, Methods and Applications of State-of-the-Art Diagnostic Tools Using Optical, X-Ray and Particle Probes*" and presentation of a poster about my research

activity "Development and characterization of radiation shielding for electronic and photonic components for space environment".

[25/09/2023 – 29/09/2023]

Participation in the Short course and Technical sessions of the **RADECS 2023** Conference on Radiation and its Effects on Components and Systems (Toulouse).

[01/12/2022 – 31/01/2023]

Experimental training activity to learn the use of a Raman Microscope and a Scanning Electron Microscope equipped with an Atomic Force Microscope (SEM-AFM) at the Medium Range Facility 1 inside the research infrastructure of ISIS@MACH ITALIA.

[10/12/2021 – 10/06/2022]

Didactic support for Physics teaching experiments ("Piano Lauree Scientifiche", PLS) aimed at students and teachers of the "Bruno Touschek" Scientific High School (Grottaferrata, Italy) for the 2021/22 school year.

[01/03/2021 – 01/06/2021]

Experimental training activity at the "Surfaces' and interFaces" (SURF, Physics Department, University of Rome "Tor Vergata") laboratory, under the supervision of Profs. Claudio Goletti and Matteo Salvato. The examined topics were Ultra-High Vacuum techniques, RHEED and LEED diffraction techniques for the study of surfaces and use of the Kelvin probe.

PUBLICATIONS

E. Preziosi, A. Addis, C. Andreani, C. Cazzaniga, L. Fazi, C. D. Frost, M. Kastriotou, G. Levi, P. Picozza, V. Pietrosanti, G. Romanelli, M. Tardocchi, A. Ursi, E. Virgili and R. Senesi, "Effects of neutron irradiation on photomultiplier tubes and their power supplies", IEEE Transactions on Nuclear Science, Print ISSN: 0018-9499, Online ISSN: 1558-1578 Digital Object Identifier: DOI: 10.1109/TNS.2023.3309911 (2023).

CERTIFICATES

[13/04/2023 – 11/05/2023]

Certificate of attendance Excel basic level course

Course at the University of Rome "Tor Vergata" (8 hours duration).

[04/11/2021 – 04/11/2026]

Certificate of General Training and Specific Risk

Training course on Legislative Decree 81/08 and subsequent amendments (4 hours) plus Specific Risk Training Course (4 hours). Released by the "Futura" Safety Management Centre, University of Rome "Tor Vergata".

DIGITAL SKILLS

Python
LaTeX
OMERE
FASTRAD
Office Package (Word, Excel, PowerPoint, etc.)
Windows
Ubuntu
Geant4
Data analysis programs (Origin)
GIMP

LANGUAGES

Italian (mother tongue)
English (C1)
German (A2)

Rome, March 22, 2024
Virginia Pietrosanti

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