



Daniele Francescone



GOLDEN PARAGRAPH

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I am a **PhD student** in the Accelerator Physics Program at Sapienza University of Rome. I started with my studies in engineering, later I realized that I preferred a more physical knowledge of the topics I was dealing with, and I chose a study plan that allowed me to deal with more theoretical topics. I achieved my **bachelor's degree in electronic engineering** in 2017 by discussing the thesis "Electron beam wakefield expansion in hybrid dielectric-coated metallic waveguide modes". Later I continued my studies in the **nanotechnology engineering** and obtained my master's degree in in 2021. My thesis "Synchrotron light sources as advanced instrumentation for nanoscience: design study of a novel injector" is focused on a project that arises from the **collaboration of Sapienza University of Rome with Paul Scherrer Institute (PSI)**, a research center where I spent **5 months of internship**. The work was focused on the study of beam dynamics for the design of a new linac for synchrotron light source, under the supervision of **P. Craievich** and **R. Zennaro**. Afterwards, I chose to continue the collaboration with the accelerator research group in Sapienza, starting the PhD course in Rome. In the first year of PhD, I started dealing with **accelerators in the biomedical field**, in particular I was involved in the design of an accelerating structure, giving me an even more complete view on accelerators, and providing me with the fundamental tools for my career as a researcher, in addition I successfully attended and passed training courses: in February 2021 I attended at joint Universities Accelerator school (**JUAS**) the Course on Particle Accelerator, which allowed me to acquire physics knowledge on accelerating structures. Starting from this year I will begin to work with the **SPARC group** at the Laboratori Nazionali di Frascati (**LNF**) where I will collaborate with experimental measurement sessions.

WORK EXPERIENCE

[30/06/2019 - 29/11/2019] **Traineeship**

Paul Scherrer Institute

City: Villigen

Country: Switzerland

Main activities and responsibilities:

Experience as a summer student that allowed me to work on particle accelerators, taking part in a project that aimed to upgrade the SLS synchrotron. My job involved working on beam dynamics and radio frequency system

[2021 - 2022] **University teaching assistant**

Lecture assistant

City: Rome

Country: Italy

Main activities and responsibilities:

Course of Physics I (Mechanics and Thermodynamics) for Civil engineering students, held by Professor A. Sinibaldi. *Sapienza, University of Rome.*

[2022 - Current] **University teaching assistant**

Lecture assistant

Main activities and responsibilities:

Course of Physics II (Electromagnetism), for Electrical engineering students held by Professor E.Chiadroni. *Sapienza, University of Rome.*

EDUCATION AND TRAINING

[31/10/2021 - Current] **PhD in particle accelerators physics**

Sapienza, University of Rome, Rome, Italy.

[09/10/2017 - 29/07/2021] **Master in Nanotechnology Engineering**

Sapienza, University of Rome, Rome, Italy.

[2011 - 2017] **Bachelor degree in Electronics Engineering**

Sapienza, University of Rome, Rome, Italy.

[2005 - 2011] **High School graduation**

G. Cardano, Monterotondo (RM), Italy

PROJECTS

[2015 - 2016] **Sapienza corse**

I worked with the department of the university that designs a race car, in order to participate in the international competition FORMULA SAE

PUBLICATIONS

[2018] **Conference proceedings**

L. Ficcadenti, G. Castorina, D. Francescone, M. Marongiu, M. Migliorati, A. Mostacci, L. Palumbo. " Longitudinal and transverse simulations and studies in dielectric coated circular waveguides"

CONFERENCES AND SEMINARS

[18/09/2022 - 24/09/2022] **4th European network for novel accelerators (Euronnaac)** Elba island, Italy

International conference on accelerators based on new acceleration techniques, participating in the poster session with a topic on wakefield acceleration by capillary dielectric

COMPUTER SKILLS

Programming languages

Python

Calculation codes

Matlab

Simulation codes

A Space Charge Tracking Algorithm (ASTRA): beam dynamics code that tracks the particles of a distribution under the influence of internal and external fields.

CST Studio Suite: simulation platform for all kinds of electromagnetic field problems and related applications

LANGUAGES

Italian

Mother tongue

English

Advanced

Spanish

Intermediate level

COURSES AND STAGES

[01/2022 - 02/2022] **Joint Univeristies Accelerator School (JUAS)**

Course on Particle Accelerator, European Scientific Insitute, Archamps, France.

[02/2022 - 06/2022] **Physics of High Brilliance Accelerators**

Professor M. Ferrario, Sapienza Univeristy of Rome, Rome, Italy.

[06/2022 - 07/2022] **Beam instabilities in circular particle accelerators**

Prof. Mostacci Andrea, Sapienza University of Rome, Italy

Prof. Migliorati Mauro, Sapienza University of Rome, Italy

Prof. Metral Elias, Cern, Geneva, Switzerland

REFERENCE

Reference

Prof. **Palumbo Luigi**, Vice Rector for Strategic Planning - Full Professor at Dept. of Basic and Applied Science for Engineering, Sapienza University of Rome.

Prof. **Migliorati Mauro**, Associate Professor at Dept. of Basic and Applied Science for Engineering, Sapienza University of Rome.

Prof. **Mostacci Andrea**, Associate Professor at Dept. of Basic and Applied Science for Engineering, Sapienza University of Rome.

Prof.ssa **Chiadroni Enrica**, Associate Professor at Dept. of Basic and Applied Science for Engineering, Sapienza University of Rome.

AFFILIATION

[2021 - Current] **Istituto Nazionale di Fisica Nucleare (INFN)**

MASTER'S THESIS

Synchrotron light sources as advanced instrumentation for nanoscience: design study of a novel injector

Supervisor

Ing. Paolo Craievich, Paul Scherrer Institut (PSI), Switzerland

Co-Supervisor

Prof. Palumbo Luigi, Sapienza University of Rome, Italy

Description

Beam dynamics studies for a novel accelerator scheme