



# Fabio Bosco

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[fabio.bosco@uniroma1.it](mailto:fabio.bosco@uniroma1.it)

About me: My leading professional interests are addressed to accelerator physics, especially the beam dynamics in electron linear accelerators, electro-dynamics and RF systems

## ● WORK EXPERIENCE

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20/02/2022 – 30/08/2022 – Los Angeles, CA, United States

### VISITING GRADUATE RESEARCHER AT UCLA – UNIVERSITY OF CALIFORNIA LOS ANGELES

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Research and **experimental activities** in the context of the collaboration with the University of California Los Angeles (UCLA).

I have joined the activities of the Particle Beam Physics Laboratory (PBPL) where I am taking part at the **commissioning** of rf accelerating structures and **testing** the performance of cryo-cooled C-band cavities.

10/2019 – CURRENT

### PHD STUDENT IN ACCELERATOR PHYSICS – LA SAPIENZA

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Research in the field of particle accelerators joining activities of the Italian Institute of Nuclear Physics (INFN) and the Department of Basic and Applied Sciences for Engineering (SBAI).

My work focuses on the **beam dynamics** for high brightness **electron linacs** employed in novel radiation sources such as Inverse Compton Scattering machines and Free Electron Lasers. Specifically, I am developing a self-consistent fast **tracking code** which accounts for collective effects inside the accelerating sections such as wakefields and space charge forces.

**Address** Rome, Italy

02/2020 – CURRENT – Rome

### ASSISTANT LECTURER IN PHYSICS – UNIVERSITY OF ROME "LA SAPIENZA"

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**Teaching** activities as a tutor at the university of Rome "La Sapienza". In particular, I have lectured Mechanics and Thermodynamics concepts for Civil engineering and Medicine students and Electromagnetism for Aerospace engineers.

05/2019

### TECHNICAL SUPPORT AT EUPRAXIA FEL PILOT USER APPLICATION WORKSHOP – INFN

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Two days **workshop** in Rome (Italy) concerning the main progresses of the international design project EuPRAXIA (European Plasma Research Accelerator with eXcellence In Applications). I assisted the speakers providing **technical support** during the talks

**Address** Rome, Italy

06/2018 – 09/2018

### INTERNSHIP AT FERMI NATIONAL ACCELERATOR LABORATORY – FERMILAB

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Visitor student at "Fermi National Accelerator Laboratory" (Batavia, IL) employed as intern in a **summer school** program. I have been working in a Quantum Computing Laboratory where I developed a digital device aimed to characterize a Qubit system built in superconductive 3D technology. My work is summarized in a **report** titled "Digital Phase Comparator for the characterization of a Superconductive Quantum System".

**Address** Batavia (IL), United States

## EDUCATION AND TRAINING

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2015 – 2019 – Rome, Italy

### MASTER DEGREE IN ELECTRONICS ENGINEERING – La Sapienza

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Consolidated knowledge of electromagnetics and RF engineering especially through **laboratory** courses and design projects. Growth of interest for applications in fields of **modern physics** such as Particle Accelerators, Optics and Quantum Mechanics. Author of a **thesis** titled "Arbitrary Shaped Traveling Wave Accelerating Structures for Compact X-Band Free Electron Lasers" which contributed to the international project "CompactLight".

**Address** Rome, Italy

12/2018 – 02/2019 – Archamps, France

### THE SCIENCE OF PARTICLE ACCELERATORS – JUAS - ESI

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International course concerning the physics of **Particle Accelerators**, Archamps (France). The course is provided by JUAS (Joint Universities Accelerator School) which belongs to ESI (European Scientific Institute). Understanding of the fundamental topics for the subject, either through theoretical lessons, visits, seminars and **workshops**.

**Address** Archamps, France

2012 – 2016 – Rome, Italy

### BACHELOR DEGREE IN ELECTRONICS ENGINEERING – La Sapienza

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Advanced studies of electromagnetics engineering and applied physics. Acquisition of a **theoretical** background as well as knowledge of tools for the **analysis** of systems. Author of a theoretical **thesis** in Electromagnetic Fields titled "Generalized Brewster Phenomena in Planar Structures with Losses".

**Address** Rome, Italy

## LANGUAGE SKILLS

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Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
<b>ENGLISH</b>	C2	C2	C1	C1	C1

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

## ● **DIGITAL SKILLS**

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### **My Digital Skills**

#### **Programming Languages**

Basic knowledge of C | Good knowledge of Fortran

#### **Data Analysis Tools**

Prolific use Python | Matlab

#### **Particle Tracking Codes**

General Particle Tracer | ASTRA

#### **Electromagnetics CAD**

ANSYS (HFSS) | CST

#### **Scientific Writing**

Microsoft Office | Proficient User of Latex

## ● **PUBLICATIONS**

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### **Modeling short range wakefield effects in a high gradient linac**

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Proceedings of IPAC2021, Campinas, Brazil  
2021

### **Three-dimensional space charge oscillations in a hybrid photoinjector**

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Proceedings of IPAC2021, Campinas, Brazil  
2021

### **Beam dynamics for a high field C-band hybrid photoinjector**

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Proceedings of IPAC2021, Campinas, Brazil  
2021

### **Preliminary Studies of a Compact VHEE Linear Accelerator System for FLASH Radiotherapy**

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Proceedings of IPAC2021, Campinas, Brazil  
2021

### **High field hybrid photoinjector electron source for advanced light source applications**

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<https://doi.org/10.1103/PhysRevAccelBeams.25.063401> – 2022

## ● **DRIVING LICENCE**

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**Driving Licence:** B

- **COMMUNICATION AND INTERPERSONAL SKILLS**

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### Communication and interpersonal skills

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Good communication and team-working skills gained during academic years, through design projects and laboratory experiences made together with other classmates. I also improved these skills by means of personal activities taking part in theatre and music projects.

- **PERSONAL INTERESTS**

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### Personal Interests

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My main personal interests are

Music: I enjoy seeing live shows as well as performing with trumpet and guitars

Drawing: I usually make comics-like sketches for friends, street artists and strangers.

Literature and creative writing: I enjoy reading novels and sometimes to write short tales