

## PERSONAL INFORMATION

Michele D'Andrea



Date of birth

Nationality

## EDUCATION

## University

September 2021 - September 2023

## Master's Degree in Physics

Sapienza University of Rome, Rome (IT).

**Curriculum** in Particle and Astroparticle Physics. Average grade of exams: 29.65.**Description:** *I am currently pursuing a Master's degree in Experimental Particle Physics, with a focus on deepening my understanding on the phenomenology of high energy physics processes choosing elective theoretical courses like: Symmetry of fundamental interaction, Electroweak Interaction, Quantum electrodynamics, Weak interaction in the standard model and beyond. This theoretical background will help me to deeply understand and interpret the experimental side of particle physics.*

Mark: 110/110 Cum Laude

September 2017 - March 2021

## Bachelor's Degree in Physics

Sapienza University of Rome, Rome (IT).

**Curriculum** in Physics.**Thesis:** *Flavor oscillation of neutral B mesons  $B^0/\bar{B}^0$* , supervisor: Prof. S. Rahatlou.

Mark: 106/110.

## High School

September 2012 - July 2016

## Diploma di Liceo Scientifico (Science Major)

Liceo Scientifico Statale "Louis Pasteur", Rome (IT).

ADDITIONAL INFORMATION ON  
PROJECTS AND THESIS

## Bachelor's thesis

B.S. in Physics

Title **Flavor oscillation of neutral B mesons  $B^0/\bar{B}^0$** , supervisor: **Prof. S. Rahatlou.**

Description The thesis project discusses about quantum behaviour of neutral B mesons during their time evolution. Studying this system greatly improved my understanding of the quantum nature of particles, as it introduced me to mathematical tools that predict the flavor oscillation and the decay of these mesons. Furthermore, the study delves the CP-violating nature of electroweak interaction and also describes the first evidence of neutral B meson oscillation that was done at *DESY* with the *ARGUS* experiment in 1987.

## IFAE CATANIA 2023

Master's Degree

Association **IFAE**

Description From April 12th to 14th, 2023, I attended the IFAE (Incontri di Fisica delle Alte Energie) conference organized by INFN. During this event, I presented my Master's thesis work in collaboration with the ATLAS experiment at CERN.

## Physics Laboratory 2

Master's Degree

Experiment **Brooklyn experiment**, supervisor: **G. Cavoto, G. Traini. and L. Soffi.**

Description During my Master's degree, I spent 80 hours in both Physics and Engineering department at University of Rome "La Sapienza" to complete the course "Physics Laboratory 2" taught by Professor G. Cavoto. I was involved in the construction of a plastic scintillating fiber-based hodoscope (Brooklyn), which we later characterized by analyzing its key properties. This experience improved my mechanical skills and knowledge about detector's characterization analysis. All the details of the building stage of the experiment can be found in: **Brooklyn Experiment (link)**

## PH lab

Ongoing

Association **Ph lab**

Description Since 2018 I'm an active member of **Ph lab (link)**, where I am employed as a tutor for high school students. My duties include educating them on the various aspects of the scientific world and providing instruction on the basic practices and techniques of experimental physics.

## SCHOOLS

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### Schools

## CERN Summer Student Programme 2023

**CERN**

In 2023, I was selected for the CERN Summer Student Programme. The programme involved spending twelve weeks at CERN in Geneva, working on a High Energy physics project and attending theoretical and experimental lectures on particle physics. Throughout this period, I had the opportunity to enhance my knowledge in the field of high-energy physics, particularly in terms of software, as my project focused on the Geant4 particle detector simulation tool.

## INFN INSPYRE project 2016

**INFN, LNF ("Laboratori nazionali di Frascati"), Frascati (Italy).**

In 2016, I was selected by my high school to attend a five-day course on Quantum Mechanics at the National Laboratories of Frascati of the INFN (National Institute of Nuclear Physics).

## COMPUTER AND PROGRAMMING SKILLS

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### Programming languages and software

C, C++ **Excellent knowledge**, which includes HEP software packages (ROOT and Geant4).

Python **Excellent knowledge**, which includes deep-learning packages (Keras, Tensorflow, PyTorch).

R, Matlab **Good knowledge.**

Other software Mathematica, Latex, Office.

Operating systems Mac OS, Windows, Linux.

#### Exams

**Computing Methods for Physics (a.y. 2021/2022):** Prof. F. Pannarale. Advanced course on C++ and Python programming languages, mostly object oriented programming and montecarlo simulation. **Mark 30 Cum Laude**

**Machine learning (a.y. 2019/2020), Bachelor degree exam:** Prof. S. Giagu, Introductory course on Machine learning. Mainly Keras and TensorFlow projects. **Mark 30**

#### LANGUAGES

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Italian **Mother tongue.**

English **Excellent knowledge.** Master's degree in Physics attended in English language. One month of language course at "LAL schools" in Fort Lauderdale, Florida(US).

Spanish **Good Knowledge.**

French **Basic knowledge.**