

PERSONAL INFORMATION

Scodeggio Marco

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Sex Male | Date of birth 22/01/1993 | Nationality Italian

WORK EXPERIENCE

01/12/2017–28/02/2019

Physicist (Withdrawn from PhD before its natural end)

Deutsches Elektronen-Synchrotron (DESY)
Notkestraße 85, 22607 Hamburg (Germany)

As a PhD student for the ATLAS experiment of the *Conseil européen pour la recherche nucléaire* (CERN) (Geneva, Switzerland), I conducted independent scientific research under the supervision of Dr. Kerstin Tackmann (main supervisor) and Prof. Dr. Peter Schleper (co-supervisor); in particular I was

- Integration Testing developer for the electron/photon subgroup:
 - written the C++ code for such a test;
 - been involved in the creation of a simple webpage for the visual display of such a test;
 - presented the updates to the aforementioned subgroup and created a wiki page explaining the functionality of such a test.
- Main author and analyzer of a project aimed to provide a quantitative prospect of Higgs boson two decay modes (namely $H \rightarrow ZZ^* \rightarrow 4l$ and $H \rightarrow \gamma\gamma$) cross section for the Large Hadron Collider (LHC) expected upgrade; for said analysis I also presented updates and the final work to the subgroups under which I was working. The published note can be found at <https://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/PUBNOTES/ATL-PHYS-PUB-2018-040/>.

05/2017

Teaching to High School students

Università degli Studi di Ferrara, Ferrara (Italy)

Within the framework of "Stage Estivo Fisica @UniFe 2017" (part of the compulsory "Alternanza Scuola-Lavoro" project aimed to high school students), I presented the BESIII Ferrara group and introduced particle physics to high school students.

09/2016–08/09/2017

Physicist

Istituto Nazionale di Fisica Nucleare (INFN), Ferrara (Italy)

As an associate of the INFN, during my Master studies, for the BESIII experiment (Beijing, China), I conducted independent scientific research under the supervision of Prof. Isabella Garzia (main supervisor) and Dr. Gianluigi Cibinetto (co-supervisor); in particular

- I primarily conducted a measurement of the physical features of a not well known particle (namely the *charmonium state* $h_c (1^1P_1)$); during this analysis I had to present updates, for which I also travelled to Beijing and Guangzhou, in front of my reference subgroups;
- I also participated with the Italian subgroup of BESIII in developing a prototype of a cylindrical Gas Electron Multiplier (GEM) detector, as well as the detector itself, needed for an upgrade of the BESIII detector, by:

- developing a MonteCarlo (MC) simulation of a detector tracking system containing the aforementioned detector, in order to test different working conditions;
- being involved with in-house measurements and analysis of different physical quantities related to the GEM detector.
- In October 2016, I spent, as a shifter, a week at CERN for a beam test, with the aim of validating the prototype of a GEM detector.

07/2016–09/2016 **Physicist**

Fermilab, Batavia (United States)

As a summer student I conducted independent scientific research under the supervision of Dr. Giulia Brunetti with the Fermilab group of NOvA, participating in the implementation of a Convolutional Visual Network applied to particle identification (in particular focusing on the neutral pion identification).

01/2016–06/2016 **Physicist**

Laboratoire de l'Accélérateur Linéaire (LAL), Orsay (France)

During the compulsory internship I had to pursue during my first year of master in France (M1 General Physics), I conducted independent scientific research under the supervision of Dr. Lydia Iconomidou-Fayard with the LAL group of ATLAS, participating in the study of some figures of merit related to the performances of a Higgs boson decay mode (namely $H \rightarrow ZZ' \rightarrow 4l$).

10/2014–05/2015 **Physicist**

Università degli Studi di Ferrara, Ferrara (Italy)

During my Bachelor studies, for the BESIII experiment (Beijing, China), I conducted independent scientific research under the supervision of Prof. Mauro Savrié (main supervisor) and Dr. Gianluigi Cibinetto (co-supervisor); in particular

- I primarily wrote a C++ analysis code for beam test data and performed the analysis itself, aim of which was to study and characterize a planar prototype of a Gas Electron Multiplier (GEM) detector;
- In December 2014, I spent, as a shifter, a week at CERN for a beam test, with the aim of validating the prototype of a GEM detector.

EDUCATION AND TRAINING

10/2018

PIER Graduate Week, Hamburg (Germany)

The PIER (Partnership for Innovation, Education and Research) Graduate Week, an interdisciplinary lecture and workshop week for young scientists, offers a wide range of introductory and focus courses in the PIER research fields.

I attended the “*Entrepreneurship for scientist*” and “*Introduction to Nanoscience*” courses.

09/2018

BND School, Berlin (Germany)

The school, intended for experimental high energy physicists, provided lectures on theoretical and experimental aspects of the field. I also attended lectures on machine learning and Geant4 detector simulation.

02/2018

Terascale Statistics School, Hamburg (Germany)

The school provided lectures on statistics applied to high energy physics.

05/2017

INFN School of Statistics, Ischia (Italy)

The school provided lectures on statistics applied to high energy physics.

06/2015–09/2017

Master’s Degree in Physics

EQF level 7

Double Master’s Degree in Physics, Università degli Studi di Ferrara (Italy) & Université Paris-Sud (France)

The Double Master’s Degree in Physics (DMDP) consists of a master degree held in two different institutions in two consecutive years. At the end of the two years, the DMDP grants two Master’s Degrees from the two attended institutions.

- September 2016-September 2017: Master’s Degree in Physics (M2) at Università degli Studi di Ferrara.
 - Graduated 110/110 **cum Laude** (aggregate average mark **29.88/30**) on the 8th of September 2017 with a Thesis titled “*Inclusive Measurements of $h_c(1^1P_1)$ in $\psi(2S)$ Decay*” under the supervision of Prof. Isabella Garzia.
 - **Related courses of the M2:** Nuclear Physics, High Energy Physics Laboratory, Phenomenology of the electroweak interactions.
- September 2015-July 2016: M1 General Physics at Université Paris-Sud.
 - **Related courses of the M1:** Particles, Nuclei & Universe, Solid State Physics, Statistical and Quantum Mechanics, Experiments and Applications in Sub-Atomic Physics, General Relativity & Cosmology, Sensors, Measurements & Signal Processing, Mathematical & Statistical Methods.

07/2012–07/2015

Bachelor of Science in Physics

EQF level 6

Università degli Studi di Ferrara, Ferrara (Italy)

Graduated 110/110 **cum Laude** (aggregate average mark **30.62 / 30**) on the 24th of July 2015 with a thesis titled “*Analisi dei dati di un test su fascio di un prototipo di rivelatore a GEM*” (Analysis of beam test data of a prototype of a GEM detector).

07/2012

Diploma Scientifico (High School Scientific Diploma)

EQF level 5

Liceo Scientifico Antonio Roiti, Ferrara (Italy)

Final mark 100/100.

PERSONAL SKILLS

Mother tongue(s)

Italian

Foreign language(s)

| | UNDERSTANDING | | SPEAKING | | WRITING |
|---------|---------------|---------|--------------------|-------------------|---------|
| | Listening | Reading | Spoken interaction | Spoken production | |
| English | C2 | C2 | C2 | C1 | C1 |

| | | | | | |
|--------|----|----|----|----|----|
| French | A2 | B2 | B1 | B1 | A2 |
| German | A2 | A1 | A2 | A2 | A1 |

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
 Common European Framework of Reference for Languages

Communication skills I gained good communication skills in front of both technical and non-technical audience, due to the many presentations and updates requested by my work and as well as to the teaching opportunities I had during my University years.

Organisational / managerial skills My experiences abroad and the collaborations I had with sundry groups allowed me to developed good team-work and the ability to adapt to different work dynamics.

| SELF-ASSESSMENT | | | | |
|------------------------|-----------------|------------------|-----------------|-----------------|
| Information processing | Communication | Content creation | Safety | Problem-solving |
| Proficient user | Proficient user | Proficient user | Proficient user | Proficient user |

Digital skills - Self-assessment grid

- I can use effortlessly Unix, macOS, and Windows operative systems.
- I am quite verse in sundry coding languages: C, C++, Python, Matlab, LATEX.
- During my PhD I got acquainted to languages used in web development, such as HTML, PHP and JavaScript, and to the usage of the GitLab repository.
- I also have some experience with R.
- Being a physicist, I got acquainted with many programs of data analysis, such as ROOT, as well as with data simulations, using Montecarlo methods and being introduced to Geant4.

Driving licence B

ADDITIONAL INFORMATION

Honours and awards **May 2018**
 Awarded with the honorific diploma “Ferrara School of Physics”, obtained for having attained an international curriculum with excellent results, mastering English in a scientific framework.

July 2015
 Awarded with the “Idex Paris-Saclay” scholarship.

Publications The main publications are listed below. For a complete list please refer to inspirehep.net/author/profile/Marco.Scodeggio.2.

- G. Aad *et al.* [ATLAS Collaboration], "Search for high-mass dilepton resonances using 139 fb⁻¹ of pp-bar collision data collected at $\sqrt{s} = 13$ TeV with the ATLAS detector", **arXiv:1903.06248**
- M. Cepeda *et al.* [Physics of the HL-LHC Working Group], "Higgs Physics at the HL-LHC and HE-LHC", **arXiv:1902.00134**
- R. Farinelli *et al.*, "A Cylindrical GEM Inner Tracker for the BESIII Experiment At IHEP," Springer Proc. Phys. **213** (2018) 116, **doi:10.1007/978-981-13-1316-5_21**
- S. Marcello *et al.*, "A new inner tracker based on GEM detectors for the BESIII experiment," Int.

J. Mod. Phys. Conf. Ser. **48** (2018) 1860119, doi:[10.1142/S2010194518601199](https://doi.org/10.1142/S2010194518601199)

- R. Farinelli *et al.*, "A Cylindrical GEM Inner Tracker for the BESIII experiment at IHEP," arXiv:[1807.00500](https://arxiv.org/abs/1807.00500)
- L. Lavezzi *et al.*, "The new cylindrical GEM inner tracker of BESIII" Int. J. Mod. Phys. Conf. Ser. **46** (2018) 1860077, doi:[10.1142/S2010194518600777](https://doi.org/10.1142/S2010194518600777)
- I. Garzia *et al.*, "GEM detector performance with innovative micro-TPC readout in high magnetic field" EPJ Web Conf. **170** (2018) 01009, doi:[10.1051/epjconf/201817001009](https://doi.org/10.1051/epjconf/201817001009)
- L. Lavezzi *et al.* [CGEM-IT Collaboration], "Test beam results with prototypes for the new Cylindrical GEM Inner Tracker of the BESIII experiment", Nuovo Cim. C **41** (2018) no. 1-2, 78, doi:[10.1393/ncc/i2018-18078-7](https://doi.org/10.1393/ncc/i2018-18078-7)
- L. Lavezzi *et al.*, "The Cylindrical GEM Inner Tracker of the BESIII experiment: prototype test beam results", JINST **12** (2017) no. 07, C07038, doi:[10.1088/1748-0221/12/07/C07038](https://doi.org/10.1088/1748-0221/12/07/C07038)
- M. Da Rocha Rolo *et al.*, "A custom readout electronics for the BESIII CGEM detector", JINST **12** (2017) no. 07, C07017, doi:[10.1088/1748-0221/12/07/C07017](https://doi.org/10.1088/1748-0221/12/07/C07017)
- R. Farinelli *et al.*, "Development and test of a μ TPC cluster reconstruction for a triple GEM detector in strong magnetic field" 2016 IEEE Nuclear Science Symposium, Medical Imaging Conference and Room-Temperature Semiconductor Detector Workshop, doi:[10.1109/NSSMIC.2016.8069914](https://doi.org/10.1109/NSSMIC.2016.8069914)