Curriculum vitae

PERSONAL INFORMATION **Scodeggio Marco**

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01/12/2017–28/02/2019 **Physicist (Withdrawn from PhD before its natural end)**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 $H \to ZZ^* \to 4l$ and $H \to \gamma\gamma$) 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.

Digital skills

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

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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**

- R. Farinelli *et al.*, "*A Cylindrical GEM Inner Tracker for the BESIII experiment at IHEP,*"
  arXiv: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**

- 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**

- 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

- 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**

- 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**

- R. Farinelli *et al.*, "*Development and test of a μTPC 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

Il sottoscritto dichiara di essere informato, ai sensi del d.lgs. n.196/2003 e del GDPR 679/16 – "Regolamento europeo sulla protezione dei dati personali" che i dati personali raccolti saranno trattati anche con strumenti informatici esclusivamente nell'ambito del procedimento per il quale la presente dichiarazione viene resa e per tutti gli adempimenti connessi.