Alessandro Manfredini

Curriculum Vitae

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Personal Details

Birth *November 11th 1985*, Rome, Italy.

Nationality *Italian.*

Education

2018–Present **Postdoctoral Fellow**.
University Of Zurich, Zurich, Switzerland.

2014–2018 **Postdoctoral Fellow**.
Weizmann Institute of Science, Rehovot, Israel.

2011–2014 **Ph.D. Student of International Max Planck Research School.**
Max-Planck Institute For Physics, Munich, Germany.

2008–2010 **Master of Science in Nuclear and Sub-nuclear Physics.**
University of Roma Tre, Rome, Italy. Grade: 110/110 magna cum laude.

Highlights

2016–2018 XENON1T's statistical inference co-coordinator.

2019 – DARWIN's electrodes and high voltage sub-group coordinator.

2017 Awarded *"senior postdoctoral fellow"* at Weizmann Institute of Science.

Since 2014 Member of XENON1T's slow control developers team.

2011–2014 Data analyst in the ATLAS experiment.

Second Postdoc

2018–Present I joined the group of Prof. Laura Baudis as co-leader of an R&D project for the future DARWIN dark matter detector. DARWIN will be a 50 tonne liquid-xenon time projection chamber. The aim of this project is to demonstrate electron drift in liquid-xenon above 2.6 m. For this experiment, I am currently designing the field cage of the time projection chamber and a fully automated monitoring and control system. I was recently appointed coordinator of the DARWIN's electrodes and high voltage sub-group.

First Postdoc

2014–2018 I joined the XENON dark matter project in 2014 in the group of Prof. Ran Budnik. The XENON project features deep underground experiments that aim to detect dark matter with a dual phase liquid xenon Time Projection Chamber. XENON1T is the most sensitive dark matter experiment to date.

Statistics: For two years I was co-leading the statistical inference effort of the XENON1T experiment. I was part of a team that performed the statistical combination of the three science runs of the XENON100 experiment.

Data Analysis: I contributed to two independent searches of the XENON100 experiment, being one of the main analyzers. One performing dark matter search in the framework of Effective Field Theory. The other investigating inelastic dark matter scattering on ^{129}Xe isotope.

Slow Control: I was part of the XENON1T slow control developers team. My main contribution was to design the safety and motion control systems for a set of motors and belts used to move calibration sources in the experiment. I also developed the XENON1T PMTs high voltage module controller, and the safety system of the experiment's water recirculation facility.

Research during Ph.D.

I joined the ATLAS experiment in 2011 under the supervision of Prof. Siegfried Bethke and Dr. Sandra Kortner. ATLAS is a general purpose particles detector and part of the Large Hadron Collider project.

Thesis Title: "Search for Neutral MSSM Higgs Bosons in $A/h/H \to \tau^+\tau^- \to e\mu + 4\nu$ Decays with the ATLAS Detector."

Data Analysis I was part of the ATLAS Beyond Standard Model Higgs sub-group. I contributed to the neutral MSSM Higgs boson search of which I was one of the main analyzer. My contribution was focused on the estimation of the backgrounds and their systematics, the implementation of the probability model for hypothesis testing, and on studies aimed to improve the signal sensitivity at low mass employing flavor tagging techniques.

Software Skills

C++ Proficient. Deep knowledge of ROOT framework, ROOSTAT and RooFit.

Python Basic knowledge.

Automation PLC ladder diagram, structured text and SCADA programming.

Web This is one of my hobby. Proficient in HTML, CSS, JavaScript, SQL and NoSQL database. Server-side (NodeJS/Django) and client-side programming.

Language Skills

Mother tongue Italian

Other English (fluent), Spanish (basic), German (basics).