Andrea Bersani's Resume

| Name: | Andrea Bersani |
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| Academic qualifications: | Degree in Physics achieved at Genova University, September the 19 th , 2001 Ph.D. in Physics achieved at Genova University, April the 14 th , 2005 |
| PostDoc positions: | Grant, co-financed by EU and INFN, to work on target & magnet for the PANDA experiment. The grant started on July the 25 th , 2005, and ended on July the 24 th , 2007. Contract, financed by EU to work with INFN, to work on PANDA magnet system. The grant started on October the 10 th , 2007, and ended on September the 30 th , 2008. Temporary position as scientist at the University of Glasgow, to work on PANDA magnet system. The contract started on October the 1 st , 2008 and ended on January the 31 st , 2009. Temporary position with INFN, financed by EU, to work on PANDA and on FAIR. The contract started on February the 2 nd , 2009, and ended on November the 1 st , 2010. Grant with INFN to work on CUORE. The contract started on November the 2 nd , 2019, and ended on October the 4 th , 2012. Temporary position with INFN to work on computing. The contract started on October the 5 th , 2012 and ended December the 31 st , 2016 Consultant for Fermi National Accelerator Laboratory, with a contract that started on February the 1 st , 2017 Temporary position with INFN to work on HL-LHC magnets. The contract started on May the 3 rd , 2017 and ended September the 30 th , 2018 |
| Present position: | Permanent position at INFN since October the 1 st , 2018: presently working with the applied superconductivity group at Genova INFN Division. |

Scientific Activities

Degree Thesis Activity

As a degree thesis activity, I made the first target spin asymmetry measurement in exclusive electroproduction of π^+ from a polarised protons target. The measurement was performed using the data of EG1 and EG2000 experiments, performed with the CLAS spectrometer at the Jefferson Laboratories (<u>http://www.jlab.org</u>). I also attended for a period to the data taking of EG2000 experiment, both taking some shift on the experiment and performing the raw data reconstruction for further analysis.

Ph.D. Activity

My Ph.D. activity was devoted to NEMO (NEutrino Mediterranean Observatory, http://nemoweb.lns.infn.it) and ANTARES (Astronomy with a Neutrino Telescope and Abyss environmental RESearch, http://antares.in2p3.fr): in particular, I studied from various points of view the possibility to extend the sensitivity of the detector to the low energy part of cosmic neutrinos spectrum. I started from a simulation campaign aimed at defining how the detector unit, the optical module, can be optimised. In the second part of my work I built one of these optical modules using a set of oriented small photomultipliers (PMTs) housed inside a glass sphere and I built a test facility to measure its detection efficiency and angular acceptance for signals produced by atmospheric muons in water. The results were part of the basis on top of which the KM3 present design has been developed. In the last part of my job I developed the procedure to evaporate a bialkali photocathode in view of the design of a large effective area, multianodic PMT.

Research Activity

For several years after my PhD I worked on the PANDA experiment (http://www-panda.gsi.de), working on two tasks. I studied the design of the detector solenoid, a thin superconducting coil with its iron flux return yoke, making many models and calculations with proper software (Ansoft Maxwell and AutoDesk AutoCad), producing a final design completely compatible with all the detectors' requirements. In addition, I worked on the internal gas jet target: in particular, I'm working on the new slow control system, based on modern PLC technology, for the target itself. My work has been recognised by the PANDA collaboration making me member of the Editorial Board of the TDR for the PANDA magnet system and for the PANDA target system. In addition, since the beginning of February 2009 to the end of 2011, I have been member of the FAIR Joint Core Team Research Coordination Group, a restricted coordination group in charge of supervising both the experiments and the overall progress of the laboratory.

In November 2010 I joined the CUORE collaboration. For this detector, I've been responsible for the vibration suppression in the cold mass suspension. This is essential to ensure the best energy resolution of the CUORE bolometers: the energy inlet, in any form, must be minimised to achieve this result. I developed the measurement system, performed the measurements and analysed the results on the vibration transmission along the detector suspension. I also contributed to the construction of the suspension itself.

In October 2012 I Started woring for the Computer Centre of INFN Genova Division, mainly on central UNIX/LINUX services. My work was mainly devoted to cloud computing, virtualisation and distributed storage, from the point of view of management and informatics infrastructure. I cooperated with my group in the maintenance and development of all the IT systems of our Computer Centre, ranging from network, to wi-fi, distributed storage, batch queues for massive computing, both based on the GRID infrastructure and on local basis, mail system, VPN, user support. I also worked on web services, implementing SVNs, wiki pages, different CMSs, management interfaces for virtual machines.

Since July 2015 I started collaborating with the applied superconductivity group in Genova, in particular on the HL-LHC dipoles for LHC upgrade at CERN development and on the follow-up of the group ongoing activity on Mu2e at Fermilab.

My main task, on this side, has been the final mechanical and thermal calculations on the Transport Solenoid coils. I also followed the construction of the model module and its shrink fitting, in close collaboration of the FermiLab group in charge of the TS procurement, at ASG Superconductors premises, which is the magnet supplier. This activity proceeded with my contract with FermiLab: I have been now in charge of witnessing all the activities at ASG Superconductors premises and analysing all the mechanical potential issues in the various coils that are produced.

In parallel, I contributed to the development of MBRD (Beam Recombination Dipole) dipole for HL-LHC and to the follow-up of the construction of a short model of this magnet at ASG Superconductors. I contributed to the analysis of the model experience and to the definition of the project for the full-length prototype and series.

Genova, October the 18th, 2018