

Activities report

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Abstract. I present a report of a three month stay at CERN, working for the construction of ACORDE-ALICE detector as a HELEN grant holder (STT fellowship type)

1ST MONTH: FEBRUARY 24 - MARCH 23, 2006

Together with Guillermo Tejeda Muñoz and Ildefonso León Monzón, both HELEN grant holders, we started the installation 20 ACORDE (A cosmic ray detector for ALICE) modules and related electronics at TPC-ALICE "clean room", in Point 2-LHC.



FIGURE 1. ACORDE module. The scintillator modules consist of two superimposed scintillator counters with their corresponding photomultipliers active faces, looking back to back. A coincidence signal, in a time window of 40 ns, from the two scintillator paddles gives, the trigger signal.

The following actions were done during this stay:

- Measure the cosmic ray rate for each module.
- Design of the metallic supports to locate 10 modules above and 10 modules underneath the TPC.

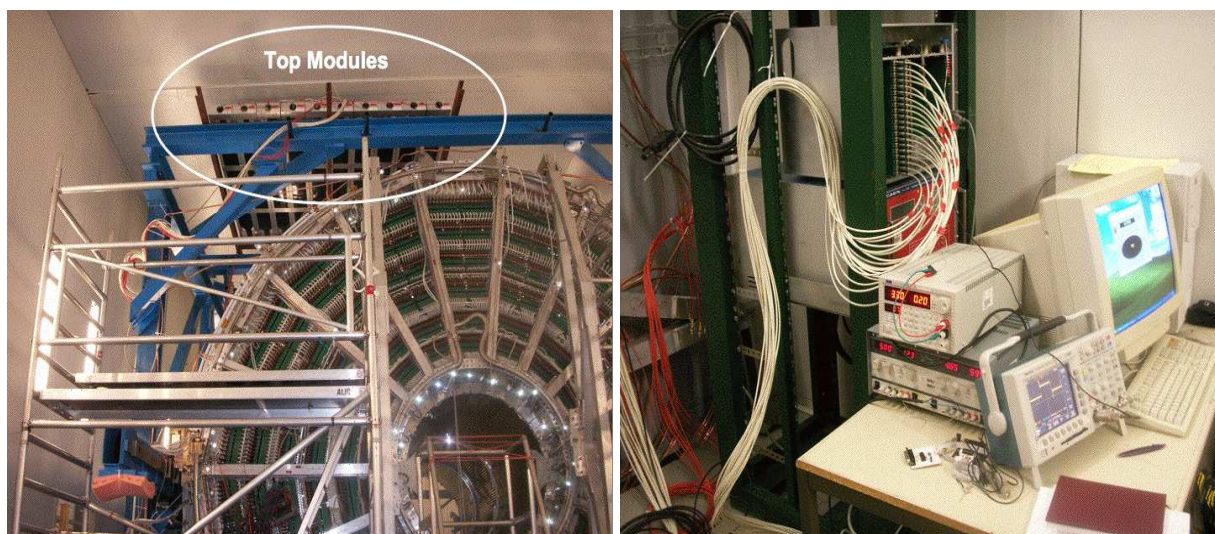


FIGURE 2. Left: ACORDE modules on top of the and ALICE-TPC. Righth: ACORDE electronics and related DAQ system for the ALICE-TPC cosmic ray characterization.

- Installation of the HV, signal and power cable for 20 modules.

SECOND STAY (TWO MONTH): MAY 17 - JULY 18, 2006

In collaboration of a group of five HELEN fellows (Guillermo Tejeda, Ismael Cortes, Sergio Roman, Roberto Noriega and Felipe Pacheco) we finalized the ACORDE Pre-commissioning (TPC tests using cosmics) and completed the reparation and final checks of 60 ACORDE modules.

The main activities related with this work are described as follows:

- Checking and reparation of 60 modules shipped from Mexico to CERN in December 2005. Must of the work done was to repair the wrapping of the scintillator paddles to avoid light leaks. (Task responsible: Sergio Roman)
- Change of 40 old PMTs for new ones into 20 ACORDE modules.(Task responsible: Roberto Noriega)
- Installation of the ACORDE-DAQ system. (Task Responsible: Guillermo Tejeda.
- Communication between ACORDE electronics and Trigger LTU card. (Task responsible: Guillermo Tejeda)
- Monitoring of the cosmic ray trigger signal for TPC test. (Task responsible: Guillermo Tejeda)
- Development of ALIROOT and AliEn code for cosmic ray studies. (Task responsible: Ismael Cortes)
- Outreach: Official ACORDE video for ALICE web page.

PUBLICATIONS

During this stay, we submitted four papers for publication:

- A. Fernández, et. al., " ACORDE, a cosmic ray detector for ALICE.Design and Construction Report". Submitted for publication as a ALICE Technical note.
- A. Fernández, " Cosmic ray studies at CERN", *Revista Mexicana de Fisica*, Commemorative Volume of the Division of Particles and Fields of the Mexican Physical Society, eds. M.A. Perez, L. Urrutia and L. Villaseñor. Accepted for publication
- A. Cerna, et. al., "ACORDE a Cosmic Ray Detector for ALICE", *Nucl. and Instruments Methods A*. Accepted for publication
- S. Vergara, et.al., " Implementation of an automatic system to characterize the ALICE Cosmic Ray Detector". Submitted to "Revista Mexicana de Fisica", for publication.

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