

Bernardo Gómez Moreno

Report of Scientific Stay at CERN – CMS Experiment

from July 3rd to July 31st, 2006

My scientific visit to CERN during the month of July 2006 was one of 3 stays from Professors of the Universidad de los Andes (professors Carlos Avila, Juan Carlos Sanabria and Bernardo Gómez) financed by the HELEN Project .

I participated actively in the CMS Experiment, where the High Energy Physics Group of the Universidad de los Andes was admitted in March 2006 as official active member of the CMS Collaboration.

During my stay at CERN the activities were centered on the muon hardware and software, collaborating with professors Juan Carlos Sanabria during the first part of the stay, and with Professor Carlos Avila during the second part of the stay. The purpose of the activities was:

- 1.) To find the appropriate tasks for the Uniandes HEP Group at CMS, appropriate to the present conditions of the Group with one Ph.D. student resident at CERN and two prospective Ph.D. students for the next year, a second one at CERN and the third one at CIEMAT, Spain, both active for CMS.
- 2.) It was also of great importance to establish the best activity plan for the Uniandes Group while working at the home institution, Universidad de los Andes, Bogotá.
- 3.) To explore possible tasks for Uniandes engineers active at CMS, CERN, to contribute to the detector hardware.
- 4.) To explore the possibility for the Universidad de los Andes to develop the required hardware and communications conditions to establish in short term a Tier-3 center at the home institution, Universidad de los Andes, in Bogotá, to contribute to the CMS GRID, with the additional plan to extend the Tier-3 center into a Tier-2 center in the next years.

For all four points I interacted with professors Avila and Sanabria at CERN, and together with them with a series of active CMS members who at CERN lead the areas that correspond to the described tasks to be performed in the future by the Uniandes Group.

In more detail I studied the muon hardware and softer, most of all the RPCs (resistive plate chambers), to understand the possibilities for Uniandes to

contribute to CMS. As the talks with CMS muon leaders, and RPCs experts were successful, it was possible to reach concrete plans for all four points mentioned above, including a task to be completed at Uniandes, Bogotá: The simulation of RPC noise pollution. I studied CMS-Notes, CMS publications, CMS conference talks related to neutron pollution in RPCs, as well as RPC software at CMS, and the world wide available simulation software for RPCs. The mentioned RPC noise pollution simulation was started at Bogotá, august 2006.

The global result of the scientific stay at CERN during the month of July 2006 was successful at a high degree.

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