

Panels (P)

Space Weather Data: Observations and Exploitation for Research and Applications (PSW.3)

## **A PROPOSE FOR A COUNTING AND RECORDING SYSTEM FOR COSMIC RAY (MUON) TELESCOPES**

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A multidirecional high energy cosmic ray (muon) telescope is operational at the Southern Space Observatory, in Sao Martinho da Serra, RS, Brazil. This telescope is part of the Global Muon Detector Network (GMDN) and aims to study and forecast Space Weather. This paper proposes a new counting, correlation and recording solution based on an embedded system able to interface observational data by internet for remote monitoring. It is built around a Rabbit 3000 microcontroller with TCP/IP Ethernet 10Base-T connectivity. It is able to detect and count the 200ns pulses generated by the sensor system (scintillator plastics coupled with photomultipliers) during a specified period of time (generally one second). A preliminary version of a monitoring web page was developed and it is able to show the cosmic ray (muon) data of one detector in real time. The current system is an attempt to improve the reliability of the telescope when comparing to the recording system based on a personal computer, currently under operation. One advantage is the easy maintenance, since all the counting and correlation boards currently under operation can be replaced by an embedded system. Besides, as the hardware is of-the-shelf, it is only necessary to develop software routines, which is based on royalty-free libraries.