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## The SiSMUV Project: Development and Characterization of SiPM-Based UV-Light Detectors for Space Telescope Applications

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The study of Ultra High Energy Cosmic Rays is made possible by space telescopes that allow recording signals generated by Extensive Air showers (EAS) in the night side of the Earth's atmosphere. One of the requirements for these telescopes is the detection of very low photon fluxes, achievable using the latest generation SiPMs characterized by high intrinsic gains, low power consumption, low weight, and robustness against accidental exposure to light.

Despite these advantages, some technological issues still need to be addressed, such as the radiation hardness for operation in space. Therefore, the design of a SiPM-based focal surface for UHECR detection must consider the space qualification of SiPM arrays, with the development of compact arrays optimized for low dead-area focal surfaces.

SiSMUV (SiPM-based Space Monitor for UV light) is a project dedicated to developing a compact and modular UV detector for use in space telescopes designed to study the fluorescence and Cherenkov signals produced by Ultra-High Energy Cosmic Rays (UHECRs).

Each SiSMUV module incorporates a matrix of SiPMs, a readout ASIC (Radiroc by Weeroc), and an FPGA into a monolithic block. This design enables the acquisition and processing of signals from the sensors. The system can connect to a PC for standalone operation or with back-end electronics for integration into more complex systems.

In this contribution, I will describe the prototype electronics, the experimental setup and the measurements performed to obtain parameters such as the gain of the SiPMs, the dark count rate (DCR) and their photon detection efficiency (PDE). I will also present the firmware developed to interface with the readout ASIC and to transmit data to other peripherals.

### Eligibility for "Best presentation for young researcher" or "Best poster for young researcher" prize

Yes

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