Contribution ID: **1002**   Type: **Poster**

The data processing system of the POEMMA-Balloon with Radio mission

The POEMMA-Balloon with Radio (PBR) mission incorporates an advanced data processing system (DP) to enable the detection and characterization of ultra-high-energy cosmic rays and astrophysical neutrinos. The data acquisition (DAQ) system integrates inputs from the Cherenkov Camera, the Fluorescence Camera, the Radio Instrument and the X-Gamma detectors, ensuring synchronized event detection. Built upon the heritage of the EUSO-SPB2 DAQ architecture, the system has been adapted to support both the hybrid focal surface and radio instrumentation.

The DP features two redundant CPUs, differential GPS receivers, and environmental monitoring capabilities, including temperature, humidity, and gyroscope-based orientation tracking. A central clock board synchronizes data collection across all instruments, ensuring precise event reconstruction. The main trigger and clock board manages trigger signals from different detectors, supporting both joint and independent data acquisition modes. These advancements enhance the mission's contribution to multi-messenger astrophysics and provide valuable insights for future space-based observatories.

In this paper, we describe the system's main components and the design developed for this new mission.

Collaboration(s)

The JEM-EUSO Collaboration

Authors: BOIANO, Alfonso; ANASTASIO, Antonio; CAFAGNA, Francesco; PERFETTO, Francesco; OSTERIA, Giuseppe; PASSEGGIO, Giuseppe; QURESHI, Haroon Akhtar (INFN Napoli); MESE, Marco; SCOTTI, Valentina; MASONE, Vincenzo

Presenter: QURESHI, Haroon Akhtar (INFN Napoli)

Session Classification: PO-1

Track Classification: Cosmic-Ray Indirect