Geophysical Research Abstracts
Vol. 18, EGU2016-13998-2, 2016
EGU General Assembly 2016

Bread-Board Testing of the Radiation Hard Electron Monitor (RADEM) being developed for the ESA JUICE Mission

Alankrita Mrigakshi (1), Wojtek Hajdas (1), Radoslaw Marcinkowski (1), Hualin Xiao (1), Patricia Goncalves (2), Marco Pinto (2), Costa Pinto (3), Arlindo Marques (3), and Dirk Meier (4)

(1) Paul Scherrer Institute (PSI), Villigen, Switzerland, (2) Laboratorio de Instrumacao e Fisica Experimental de Particulas (LIP), Lisbon, Portugal, (3) Efacec - Engenharia e Sistemas, Moreira da Maia, Portugal, (4) Integrated Detector Electronics AS (IDEAS), Oslo, Norway

The RADEM instrument will serve as the radiation monitor for the JUICE spacecraft. It will characterize the highly dynamic radiation environment of the Jovian system by measuring the energy spectra of energetic electrons and protons up to 40 MeV and 250 MeV, respectively. It will also determine the directionality of 0.3-10 MeV electrons. Further goals include the detection of heavy ions, and the determination of the corresponding LET spectra and dose rates.

Here, the tests of the Electron and Proton Telescopes, and the Directionality Detector of the RADEM Bread-Board model are described. The objective of these tests is to validate RADEM design and physical concept applied therein. The tests were performed at various irradiation facilities at the Paul Scherrer Institute (PSI) where energy ranges relevant for space applications can be covered (electrons: $\leq$100 MeV and protons: $\leq$230 MeV). The measured values are also compared with GEANT4 Monte-Carlo Simulation results.