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Space Radiation Environment and Effects at LIP

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The Laboratório de Instrumentação e Física Experimental de Partículas (LIP) is the reference institution for experimental particle physics and associated technologies in Portugal. It was created in May 1986 to exploit the unique opportunities created by the country's accession to CERN. In the last ten years an R&D line focused on the study of Space radiation environments and their effects was created and consolidated at LIP. The competences developed include all the technologies identified on ESA's roadmap for this domain: radiation environment measurement technologies; radiation environment modelling; radiation effects analysis tools; test characterization and Radiation Hardness Assurance (RHA) of EEE components.

In this presentation we will give a brief overview of LIP activities in the field of space radiation environments and effects, namely the development of a RADIation hard Electron Monitor for the JUICE ESA mission to the Jovian system (RADEM), testing of EEE components for space missions as well as the construction of the Mars Energetic Radiation Environment Models (dMEREM) simulation tool and evaluation of the effects of space radiation on crews during manned space missions. Future projects and potential interests in FAIR will be discussed.

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