

IAF MATERIALS AND STRUCTURES SYMPOSIUM (C2)
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IMPROVING AND VERIFICATION OF THE SEU RESISTIVITY OF THE OPS-SAT PROCESSING
PLATFORM**Abstract**

The ESA OPS-SAT nanosatellite mission has the goal to bring new technology and concepts into space to break the rule “has never flown – will never fly”. OPS-SAT can be seen as a laboratory in space that provides the necessary hardware and software for the execution of experiments. Various institutions and companies have expressed their interest to contribute to the success of the OPS-SAT mission. The Satellite Experimental Processing Platform (SEPP) is a highly integrated high performance embedded payload system that is developed by Graz University of Technology for the ESA OPS-SAT mission. The SEPP is used for all on-board experiments and provides all features to control and monitor all other payload systems, perform ground communications, software updates, file transfer and data processing. Due to its criticality and the fact that standard commercial components are used, it is important to equip the SEPP with different safety mechanism that make the system as reliable as possible. Special attention was taken on the realization of mechanisms to protect the on-board electronics from Single Event Upsets (SEUs) that lead to critical damage or loss of data. The quality and effectiveness of the finally implemented mechanism were verified at the Paul Scherrer Institute in Switzerland under a representative radiation environment by using a strong proton source. This paper describes the implemented method to improve the resistivity of the OPS-SAT processing platform against SEUs and the describes the results of the verification campaign.