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FLUKA-simulations for the optimization of an ion irradiation platform for radiation hardness studies

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An experimental platform dedicated to radiation hardness experiments is currently under development at the 3 MV Tandetron™ from IFIN-HH. Following installation, the system will undergo commissioning through monitoring of the response of CARD-SAT satellite components exposed to extreme irradiation conditions, such as high dose and flux. A key aspect of the setup involves detailed FLUKA simulations, which are being used to evaluate proton transport, energy deposition profiles including the Bragg peak, and the generation of secondary particles that may influence Total Ionizing Dose (TID) and Single Event Effects (SEE). This tool support accurate assessment of Linear Energy Transfer (LET) distributions and radiation effects on space-grade electronics.

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