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Abstract

The Large Hadron Collider (LHC) collimator system is one of the main contributors to the total impedance budget of the LHC machine. The Target Dump Internal (TDI) is a Beam-Intercepting Device (BID) considered as a mix between a collimator and a dump. A TDI is located at each of the two injection points of the LHC ring and its function, among others, is to protect the downstream devices from a potential misfiring of the injection kickers. The upstream absorbing core of the TDI is made out of **Graphite (SGL R7550)** blocks sputtered with a copper coating of 2um-3um thickness. The coating is crucial in order to reduce the RF wall impedance of the device and its integrity must be ensured during all the service lifetime. Encouraged by the LHC committee, the behavior of these coated blocks was tested in the HiRadMat installation under the most unfavorable irradiation conditions that the TDI could experience.

In addition, different coatings configurations and other low-Z materials subtracts, such as **Carbon Fiber Composite (CFC) and Silicon Carbide (SiC-SiC)**, were also tested with the objective to extract information for future BIDs such as collimators and absorbers. The performance of the coatings and the structural integrity of the substrates are being evaluated through a Post Irradiation Experiment (PIE) campaign including metrology, coating adhesion tests, dynamic modulus measurements, tomography, SEM and RF impedance measurements.

Special attention will be given to the **SiC-SiC** sample for which the PIE campaign is finished.

The scope of this presentation will be to summarize the energy deposition studies, explain the final experimental set up and performance, indicate the first visual inspections after irradiation and inform about the current status of the PIE performed up to this date.

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