



Contribution ID: 47

Type: **not specified**

## HRMT48-PROTAD Experiment and Relevance for BIDs

*Thursday 20 December 2018 14:15 (25 minutes)*

For antiproton production at CERN, high energy (26 GeV/c), intense, and fast extracted proton beams are impacted into the AD-Target, whose core consists in a small rod made of a dense metal. Temperature rises in the order of 2000 °C and subsequent dynamic stresses of several gigapascals are induced in this rod every time it is impacted by the primary proton beam. Several R&D activities have been launched during the last years with the goal of proposing and manufacturing a new design of such device. A summary of these activities is presented, including the last design stage which involves the manufacturing and testing of six real scale prototypes in the HiRadMat facility within the HRMT-48 experiment. These targets prototypes (named PROTAD) consist in air-cooled Ti-4V-5Al assemblies filled by matrices made of isostatic graphite or expanded graphite (EG), containing target cores made of small rods with different diameters (from 2 mm to 10 mm) of multiple grades of Ta, Ta2.5W, W-TiC and Ir. The outcomes of this experiment will be relevant for all the BIDs –in addition to antiproton production- exposed to extreme dynamic loading, in which the beam intercepting material is inevitably subjected to stresses above its yield strength. In addition, possibilities of application of pre-compressed EG as BID component material is also discussed.

**Primary authors:** Dr TORREGROSA, Claudio; Dr CALVIANI, Marco; Dr PERILLO-MARCONE, Antonio; Mr SOLIERI, Nicola; FERRIERE, Romain; Mr EDOUARD, Grenier-Boley; Mr FORNASIERE, Elvis; BUSOM, Josep; Mr COIFFET, Thibaut; Mr TIMMINS, Marc

**Presenter:** Dr TORREGROSA, Claudio

**Session Classification:** Proton Thermal Shock