Title: Updated Robustness Limits for Collimator Materials.

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State-of-the art complex numerical methods based on advanced wave propagation codes have been developed to study the extreme phenomena induced in Beam Intercepting Devices by accidental beam impacts. A first study, based on these methods, led to the identification of damage thresholds for LHC Tertiary Collimators which were presented at Chamonix workshop in 2011.
However, numerical simulations were unavoidably affected by uncertainties due to the limited knowledge of the material constitutive models; two experiments in the HiRadMat facility were proposed to address this issue: the destructive test of a complete tertiary collimator for a thorough, integral assessment of beam accident consequences (HRMT09) and a controlled test on a multi-material test bench hosting a variety of specimens conveniently instrumented for online and offline measurements (HRMT14).
Both experiments were very successful and confirmed the effectiveness of numerical methods and material models to reliably predict beam-induced damages. Preliminary data acquired during HRMT14 provided interesting results on the ability of various materials to withstand extreme accidents.
These tests also highlighted additional potential machine protection issues, on top of mechanical damage, induced by the projection of fragments out of the tungsten jaw: these include UHV degradation, chamber pollution, contamination etc.
In line with updated accident scenarios, new damage limits are proposed for LHC Tertiary Collimators.