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A Feasibility Experiment of a W-powder Target

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The development of high-power targets constitutes a key R&D activity for future facilities presently under study like the Neutrino Factory, the Muon Collider or the upgraded high-power super beams for long-baseline neutrino experiments. The choice of materials to sustain the proposed beam power ranging up to (Multi-) MW levels is not trivial. Granular solid targets have been proposed and are being studied as candidates for such high-power target systems. In the recently commissioned HiRadMat facility of CERN, a feasibility experiment of a tungsten powder target was performed. The experiment was designed to explore for first time the impact of a high-power proton beam on a static powder target in a thimble configuration. The instrumentation of the experiment was based on remote high-speed photography as well as on laser - doppler vibration measurements of the target containers. Highlights of the results from the experimental findings are presented in this paper.

Primary author: Dr CHARITONIDIS, Nikolaos (CERN)

Co-authors: Dr FABICH, Adrian (CERN); Dr DENSHAM, Chris (STFC Rutherford Appleton Laboratory); Dr EFTHYMIOPOULOS, Ilias (CERN); Mr LOVERIDGE, Peter (Rutherford Appleton Laboratory); Dr CARETTA, ottone (RAL)

Presenter: Dr CHARITONIDIS, Nikolaos (CERN)

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