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The HiRadMat capabilities for ESSνSB future target tests

The ESSνSB project, financed by the EU H2020 programme as a 4-year design study (Grant Agreement No 777419), proposes to use the protons produced by the LINAC of the European Spallation Sources (ESS), currently under construction at Lund (Sweden), to deliver a neutrino superbeam. A very challenging component of this project is the enormous target heat load generated by a 5 MW proton beam. As a baseline, a granular (pebble-bed) target is being considered. In order to reduce the heat load, four targets are going to be used, which will be hit in sequence by the compressed proton pulses, about 1 μs long. The hadron collection will be performed by four hadron collectors (magnetic horns), one for each target.
With its very high proton pulse energy and a short pulse length of 7.2 μs, the HiRadMat facility offers very interesting possibilities of testing the properties of the ESSνSB target, when the project enters the R&D phase. These capabilities are being considered now, parallel to the design of the target.

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