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First Results of the 2021 FASER Calorimeter Test Beam

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FASER, or the Forward Search Experiment, is a new experiment at CERN designed to complement the LHC's ongoing physics programme, extending its discovery potential to light and weakly-interacting particles that may be produced copiously at the LHC in the far-forward region. New physics particles targeted by FASER, such as long-lived dark photons or dark scalars, are characterised by a signature with two oppositely-charged tracks or two photons with very high energy (~TeV) that emanate from a common vertex inside the detector. A tracking-based technology, supplemented by a magnet, four scintillator stations and an electromagnetic calorimeter to allow for energy measurements are the key components of FASER. The full detector was successfully installed in TI12 in March 2021 and operations are planned during Run 3.
In 2021 a test beam campaign was carried out using one of the CERN beam lines to establish the calibration of the FASER calorimeter system. The relative calorimeter response to electrons of different energies (between 10 and 300 GeV) and high energy muons have been measured under various HV conditions and beam positions. Preliminary results are reported in this poster and compared to simulation.

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