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The New Herschel Forward Shower Counters for LHCb

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Herschel (High Rapidity Shower Counters for LHCb) is a new subdetector which has been installed for the LHCb experiment for Run II, the 13 TeV proton-proton LHC run starting in mid 2015. It consists of $60 \times 60 \text{ cm}^2$ square scintillator stations installed in the LHC tunnel symmetrically around the interaction region. The stations are designed to identify showers from high rapidity particles interacting with beam-pipe elements. The detector is equipped with sufficiently fast readout in combination with an FPGA system which allows it to contribute to the 40 MHz first level trigger in LHCb. The primary purpose is as a rapidity gap detector which complements the LHCb coverage to identify large rapidity gap events, of particular interest for Central Exclusive Production (CEP) processes. The scintillator planes are installed at distances of between 7.5 and 114 m and the challenge is to route to LHCb over this long distance and integrate into the experiment readout and trigger. It is particularly important to control spillover in the 25 ns regime, as the small signals which constitute background to CEP events could be mimicked by spillover from inelastic interactions. Herschel is now fully installed and commissioned and shows an excellent performance which is already having an impact on the LHCb physics programme. The most recent results will be presented and future prospects discussed.

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