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Detector for $6.3 < \eta < 7.7$ (0.21° to 0.051°) for 14 TeV p-p reactions EDWIN NORBECK, PAUL DEBBINS, YASAR ONEL, University of Iowa — Diffractive events in high-energy p-p reactions are characterized by rapidity gaps, angular regions in which there are no reaction products. Ideally, they should be studied by an experiment that detects particle over the entire sphere. With the CMS experiment at the LHC (large hadron collider), particles in the range of $6.3 < \eta < 7.7$ (0.21° to 0.051°) are intercepted by the TAS, a copper cylinder of diameter 50 cm and length 180 cm that shields the following superconducting magnet. The TAS, and the detectors in it, extend to $\eta = 5.0$, but for $\eta < 6.3$ the particles are intercepted by the CASTOR and HF detectors in CMS. The TAS is provided with a horizontal $20 \text{ cm} \times 20 \text{ cm}$ slot located 20 cm (1.3 nuclear interactions lengths) from the front. When bake out of the beam pipe through the TAS is required, the entire copper cylinder is heated to 250°C for 24 hrs. Showers produced in the front part of the TAS make Čerenkov light in sheets of quartz fibers located in the slot. The fibers cover four quadrants, left-right and top-bottom. The fibers are collected into four bundles that run in channels along the side of the TAS to photomultiplier tubes at the rear where they are shielded from reaction products.

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