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First Data from the TOTEM experiment at LHC

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The TOTEM experiment at the LHC, placed symmetrically with respect to the CMS Interaction Point IP5, is optimized to measure in dedicated special-optics runs, luminosity independently, the total pp cross-section and to study elastic pp scattering over a wide range in momentum transfer from -t ~ 10 -3 to 10 GeV2. Furthermore, diffractive dissociation, including single, double and central diffractive topologies will be studied using the forward detectors in combination with Roman pot detectors close to the beams.Very forward event topologies and particle multiplicities are also studied in view of interpretations for Cosmic Rays.
Two tracking telescopes T1 and T2, at distances between 7.5 and 14m to the IP, will measure charged particles in the forward region covering an adequate acceptance over a rapidity interval of 3.1 < h < 6.5. Leading protons, scattered elastically or quasi elastically, will be detected by silicon detectors placed in Roman Pot stations at distances of 147 and 220 m from IP5.During 2010, TOTEM commissioned the RP detectors at 220 m and the T2 telescopes and was able to take data at sqrt(s) = 7 TeV. For the first time after the ISR measurements, the t-distribution (-t > 0.4 GeV2) of elastic pp scattering (at ~ 100 times larger energy than at the ISR)
is presented, exhibiting the diffractive minimum and a similar slope at larget-values as at the ISR. Also the analysis of charged particle distributions in the very forward regions is in progress.
During the LHC technical stop of 2010/11, the T1 telescopes and the
Roman Pot detectors at 147 m were installed and commissioned, completing the TOTEM apparatus. With the successful preparation of the beta* = 90 m optics,TOTEM will now be able to carry out a major part of its physics program during 2011.

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