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Overview of the ATLAS Forward Proton detector

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A key focus of the physics program at the LHC is the study of head-on proton-proton collisions. However, an important class of physics can be studied for cases where the protons narrowly miss one another and remain intact. In such cases, the electromagnetic fields surrounding the protons can interact producing high-energy photon-photon collisions. Alternatively, interactions mediated by the strong force can also result in intact forward scattered protons, providing probes of quantum chromodynamics (QCD). To aid identification and provide unique information about these rare interactions, instrumentation to detect and measure protons scattered through very small angles is installed in the beam pipe far downstream of the interaction point. The ATLAS Forward Proton (AFP) 'Roman Pot' Detector is described, covering Tracking and Time-of-Flight Detectors and the associated electronics, trigger, readout, detector control, and data quality monitoring.

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