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Firmware Upgrade of the CMS Phase-I Pixel Front-End Controller: Impact on Pixel Operation and DAQ

Pixel Front-End Controller (Pixel FEC) is responsible for programming the front-end chips and distributing the trigger, clock and fast signals to the modules in the CMS Phase-1 Pixel detector. An upgrade of the Pixel FEC firmware was undertaken and was successfully integrated within the online software. It was commissioned and deployed for the operation at the beginning of 2018. The upgrade reduced the configuration programming time of front-end chips dramatically, and also helped towards a more complete and faster recovery of the modules affected by single event upset during data-taking. The details of the implementation, along with the impact on Pixel detector operation and DAQ will be discussed.

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