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CMS iRPC FEB development and validation

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The improved RPC (iRPC) chambers, designed using thin low resistivity High Pressure Laminate gaps, are proposed to equip the very forward region of the CMS detector. They can stand rates of few kHz/cm^2 . New electronics equipped with excellent timing precision measurement (< 150 ps) has been developed to read out the RPC detectors from both sides of the strips to allow good spatial resolution along them. A special Front End Boards (FEB), developed to readout the iRPC chamber, is presented. It uses a dedicated version of the PETROC ASIC to amplify and discriminate the signal, and a custom version of delay chain TDC implemented in a Cyclone V FPGA. The design concept and R&D will be described as well as the validation steps on test bench.

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