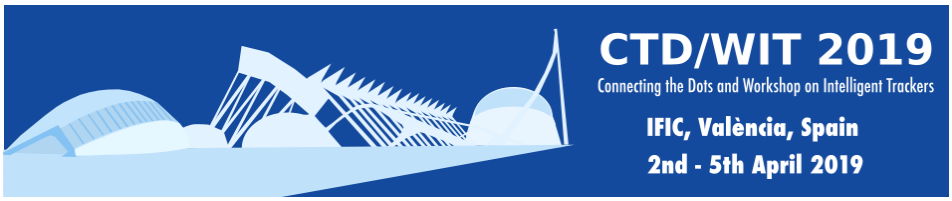

Contribution ID: **16** Type: **Talk**

A novel 4D fast tracking pixel detector

Friday, April 5, 2019 10:30 AM (25 minutes)

We present a novel 4D fast tracking system, based on rad-hard pixel detectors and front-end electronics, capable of reconstructing four dimensional particle trajectories in real time using precise space and time information of the hits. The fast track finding system that we are proposing is designed for the high-luminosity phase of LHC and has embedded tracking capabilities. A massively parallel algorithm for fast track reconstruction has been implemented in commercial FPGA using a pipelined architecture. We will present studies of expected tracking performance for a possible pixel detector of a future upgrade of the LHCb experiment and first results based on a FPGA-based hardware prototype.

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Track Classification: 5: 4D tracking and vertexing using precision timing information