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PicoTDC: 64channel TDC with ps resolution

The PicoTDC is a 64channel TDC ASIC with 12 and 3 ps time binning implemented in a 65nm CMOS technology. It is available in its final production version that have been extensively characterized to have an effective RMS resolution better than 3ps across all channels. ˜1ps rms time resolution has been demonstrated when tuned for a specific channel. Hit digitization is done at 1.28GHz with a 4 bit derandomizer buffer before further hit processing per channel is performed at 320MHz.

A flexible data flow architecture with extensive date buffering (512 hits per channel) allows the chip to be used in a continuous time tagging mode with or without triggering. Readout is performed via 4 or 1 readout ports of 8bits at a maximum rate of 320MHz.

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