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Evaluation of a new 500 MHz digitizer at Elettra and Fermi

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A new 14-bit 500 MS/s digitizer was evaluated in ELETTRA storage ring and FERMI linear accelerator. The sampling clock is hard-locked to the Master Oscillator and has a jitter of a maximum 10 ps. The AC coupled version has an analog bandwidth up to 2 GHz and was used to measure the fill pattern. The bunch flat-top is very narrow (10-15 ps). To reach better stability, various external filtering components were used. Bunch-by-bunch beam position was calculated off-line. The DC coupled version was used to sample pulses from the fast current transformer at FERMI. A software interface can configure data acquisition length and fill buffer segments with pre-defined number of triggers. Native TANGO and EPICS interfaces allow for fast integration with CSS and other display tools.

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