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Comparative analysis of signal time measurement from the wave-form.

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The front-end electronics of the modern experiments is often designed with the use of sampling ADC. The signal wave-form measured by such electronics carries information about the basic parameters of the signal of interest, its amplitude and time. Timing measurement of the sampled wave-form is a challenging task, especially when one aims for nanosecond and sub-nanosecond resolution having the sampling rate of tens MHz.

Using data from the ALICE electromagnetic calorimeter PHOS, we develop and compare algorithms for the signal timing measurement. The comparison was performed on small samples. Both classical data comparison algorithms and bootstrap techniques are used. The developed methods of timing measurement are considered as an important input towards precision measurements of signal time in high-energy experiments.

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