

DRS4 signal/noise classification algorithms

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The read-out electronics of the mRPC(multi-gap Resistive Plate Chambers) detectors of the NA61/SHINE experiment at CERN are based on the DRS4 (Domino Ring Sampler 4) chips. One of the main challenges of using these chips is to distinguish signals from noises due to their complex waveforms. FFT(Fast Fourier Transform) based algorithm was developed and already used to analyze DRS4 data collected during the tests of mRPC with the positron beam at the “PAKHRA” accelerator (LPI RAS Troitsk). The new ML(Machine Learning) based algorithm was developed and used to test the same data. The fastest elapsed time and the same performance as FFT has been achieved. Such a high performance of the ML-based algorithm gives the possibility to filter noises during real-time data-taking of the experiment.

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