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GPU-accelerated Bayesian method for waveform analysis

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In the event reconstruction, we need to extract the photon electron (PE) hit time and PE charge from waveforms. We developed a new method called Fast Scholastic Matching Pursuit (FSMP). It is based on Bayesian principles, and the possible solutions are sampled with Markov Chain Monte Carlo (MCMC). To accelerate the method, we ported it to GPU, and could analyze the waveforms with 0.01s per waveform. This method will benefit event reconstruction. The position and energy resolution will be improved, as the method extracts all the information in the waveforms.

In-person participation

No

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