

Abstract Submitted  
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**Firmware algorithms for PINGU experiment** DARIA PANKOVA, TYLER ANDERSON, Pennsylvania State Univ, ICECUBE COLLABORATION — PINGU is a future low energy extension for the IceCube experiment. It will be implemented as several additional closer positioned stings of digital optical modules (DOMs) inside the main detector volume. PINGU would be able to register neutrinos with energies as low as few GeV. One of the proposed designs for the new PINGU DOMs is an updated version of IceCube DOMs with newer electronic components, particularly a better more modern FPGA. With those improvements it is desirable to run some waveform feature extraction directly on the DOM, thus decreasing amount of data sent over the detectors bandwidth-limited cable. In order to use the existing feature extraction package for this purpose the signal waveform needs to be prepared by subtracting of a variable baseline from it. The baseline shape is dependant mostly on the environment temperature, which causes the long term drift of the signal, and the induction used in signal readout electronics, which modifies the signal shape. Algorithms have been selected to counter those baseline variances, modeled and partly implemented in FPGA fabric. The simulation shows good agreement between initial signal and the corrected version.

Daria Pankova  
Pennsylvania State Univ

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