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DAQ system for energy dispersive detectors

Thursday 7 December 2017 12:15 (15 minutes)

I will present a new DAQ system for energy dispersive detectors for X- and gamma-rays based on the MicroTCA.4 standard which is being developed at FS-PEX in collaboration with MSK Group in the frame of DESY strategy fund project.
I developed a new real-time pulse shape analysis algorithm and trigger system. Using the MSK firmware framework I implemented this algorithm in the field programmable gate array (FPGA) of SIS8300L by Struck. This ten channel fast ADC board was used in conjunction with a µRTM amplifier optimized for energy dispersive detectors, which was developed by MSK.
In combination with my control software this DAQ system will provide high energy resolution and support high count rates greater than 10^5 counts per second and allows continuous data acquisition. For a variety of detectors types it will also provide precise timing information.
Thanks to the MicroTCA.4 standard advanced clocking and triggering, high data throughput via PCIe and scalability is possible.
I will give an overview and will show first test results of the project.

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