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SP1: Update of KALYPSO systems

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KALYPSO is a 1D detector fully coupled with an Electro-Optical beam profile measurement for a sub-ps resolution at ANKA and Eu-XFEL. A recent update of the KALYPSO project will be presented. Several ongoing developments have been started to improve the performance in term of femtosecond time accuracy, noise and higher frame-rate. A custom front-end Application Specific Integrated Circuit (ASIC) has been developed to operate in low-noise condition up to 10 MHz frame-rate. Several new linear array sensitive elements have been designed and submitted for the final production, with a higher number of pixels (512/1024) and smaller pixel pitch. A Low Gain Avalanche Diode (LGAD) sensor is being developed to improve the time resolution. Finally, a DAQ framework transmits data to external GPU-based clusters, where data is processed in real-time at 7 Gbytes/s and latency in the order of few μ s.

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