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FPGA-based Tomographiecameras

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The Helmholtz-Zentrum Geesthacht develops new experiment environments for tomographie beamlines. Therfore a high resolution camera has been built with a E2V-CCD sensor with 2048*2048 pixel and a pixel size of 13.5µm². The framerate is beyond 1 fps but with a very high resolution of 16 bit.
Another camera with a cmos-Chip (CV2000) which is built by the KIT will be intgrated into our experiment setup. The aim of this close cooperation with the KIT is an experiment setup for phase contrast investigation of organic matter.
Very important parts of this setup are two plates with a very fine grid, where one plate has to be shifted in 10 nm steps in a few ms. It is very challenging to all of the setup having in mind the temperature stability which is necessary to keep the exact position. To correlate the data with the actual position the FPGA, which is programmed to handle the CMOS-Sensor and the datatransfer via a PCIe –link, has to be adapted and extended for the piezodrive control and more.

Author: Mr BURMESTER, Jörg (HZG)

Co-author: Mr PLEWKA, Jörn (HZG)

Presenters: Mr BURMESTER, Jörg (HZG); Mr PLEWKA, Jörn (HZG)

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