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Laser Synchronization with MicroTCA

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At DESY many different pulsed laser systems have to be precisely synchronized to an external reference which is an RF signal and usually also a pulsed laser signal e.g. from an optical fiber link. These kind of phase-locked loop setups are implemented on MicroTCA hardware. The feedback is realized in an FPGA on the AMC side. The actuators are driven by dedicated RTM or FMC boards like piezo driver or stepper motor driver. Synchronization with less than 7 fs rms is achieved, e.g. at the XFEL master laser.

A new dedicated LAser-SYnchronization (LASY) RTM is developed for signal conditioning and detection. It employs advanced calibration techniques like reference tracking and 2-tone calibration and will carry a dedicated mezzanine to generate LO, Clk and the 2nd tone from the reference.

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