

20 Electronics Workshop

D. Florin, P. Soland, and A. Vollhardt

Besides the usual repair work we built test setups for on-going projects, purchased components for the various research groups and did maintenance work for the LHCb experiment at CERN.

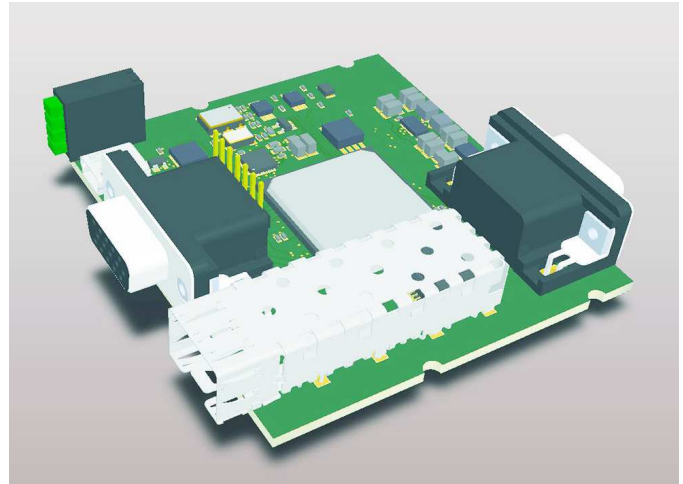
A thermoelectric generator was developed for the phase transitions, materials and application research group (Sec. 15). It contains several Peltier elements and super-capacitors for energy storage. Setups were assembled, which allow to test the device.

A compact RIO module with White Rabbit functionality was designed for the use in a new laboratory experiment (Sec. 7). White Rabbit is a project developed at CERN and GSI, aiming at real-time synchronization and Ethernet functionality through a standard glass fiber connection. Our contributions include the design of a printed circuit board fulfilling the compact RIO module specifications by National Instruments and the necessary adjustments to the FPGA firmware. The module will be installed in a commercial system.

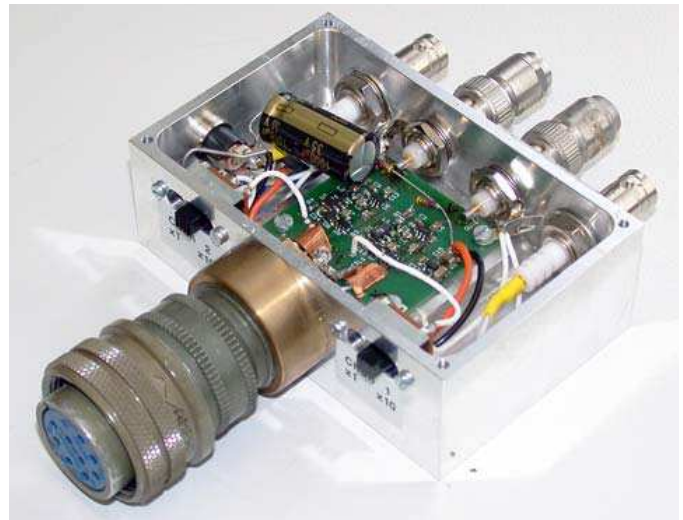
For the Cherenkov Telescope Array (CTA) experiment (Sec. 7) 200 servo motors, needed for mirror positioning, were mounted on the Medium-Size Telescope (MST) prototype in Zeuthen. For tests on the Large Size Telescope (LST) prototype another batch of 440 units was produced in collaboration with our mechanical workshop and the University of Tokyo. In parallel, the development of the pre-amplifier electronics for the focal plane instrumentation of the FlashCam project continues. For mechanical and thermal tests of the prototype FlashCam camera body built in our mechanical workshop, we installed sensors and the associated readout and control electronics.

Various projects were carried out for the group of Laura Baudis:

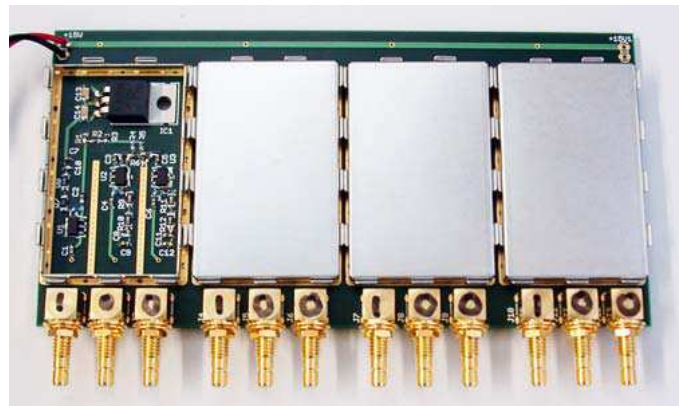
- We designed and manufactured adapters and printed circuit boards for Xurich II.
- We made studies and prepared the series production of the photomultiplier base boards for GERDA.
- For XENON1T we developed a 2-channel low noise PMT amplifier. The amphenol type plug directly connects to the Xurich test detector. Input and output impedance are 50 ohms and the unconditionally stable gain can be switched by a factor 10.
- For the same project we produced a prototype 4-channel amplifier with fixed gain and two output signals.



- CAD model of the compact RIO module



- Two-channel PMT amplifier



- Four-channel prototype amplifier for XENON1T