

Bachelor Thesis:

Development of an Automated Test Environment for High-Speed Time-Interleaved ADC Characterization and Calibration

To enable the best possible performance of a fabricated time-interleaved ADC fabrication dependent parameters like capacitor mismatch, gain mismatch and offset of each sub-ADC-lane must be determined. This requires measurements, sometimes for multiple Clock- and input-frequencies.

After which the data requires processing, to calibrate the ADC for optimal performance. Making these changes by hand is possible, however, a very tedious and time consuming process, especially for multiple chips.

Therefore, the target of this work is the implementation of a script (Python/Matlab/C++) which communicates with the lab equipment to automate the measurement process. Since the script should not only work for the given example ADC, your work also requires documentation and an easy-to-adjust solution for the communication via microcontroller and script.

The developed code is required to be easily adaptable to various ADCs.

Goals:

- 1) Writing a script which
 - a. Sets up the equipment for measurements
 - b. Starts the measurement
 - c. Processes the measured data
- 2) Designing an interface for sufficient communication with the ADC
- 3) Sufficient documentation

Prerequisites:

High interest in programming (Matlab, python, C++)

Experience with PCB design and laboratory equipment (PSU, Oscilloscope, signal generator)

Contact: f.buballa@tu-berlin.de