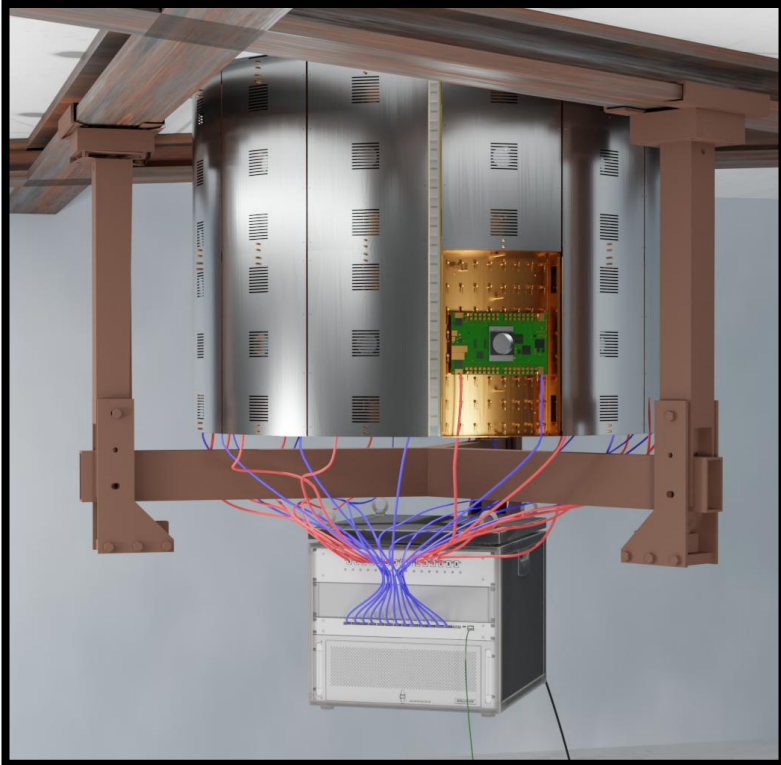


PO115: Modular Ground Penetrating Radar Tomography System with a Combination of Star and Daisy Chain DAQ and Trigger Topologies with Picosecond Accuracy

Achim Mester¹, Mathias Bachner¹, Rati Chkhetia¹, Georg Schardt¹, Egon Zimmermann¹, Ghaleb Natour^{1,2}

¹Institute of Technology and Engineering (ITE) Forschungszentrum Jülich GmbH, Jülich, Germany, ²Faculty of Mechanical Engineering (ISF), RWTH Aachen University, Aachen, Germany



Member of the Helmholtz Association

GOAL

- GPR system (0.5 – 1.5 GHz) for non-invasive 3D tomography of soils in a large scale laboratory experiment
- About 2500 antennas and more than 6 million measurable Tx-Rx combinations
- Modular design for reuse of the DAQ system development in future applications
- Module synchronization with picosecond accuracy

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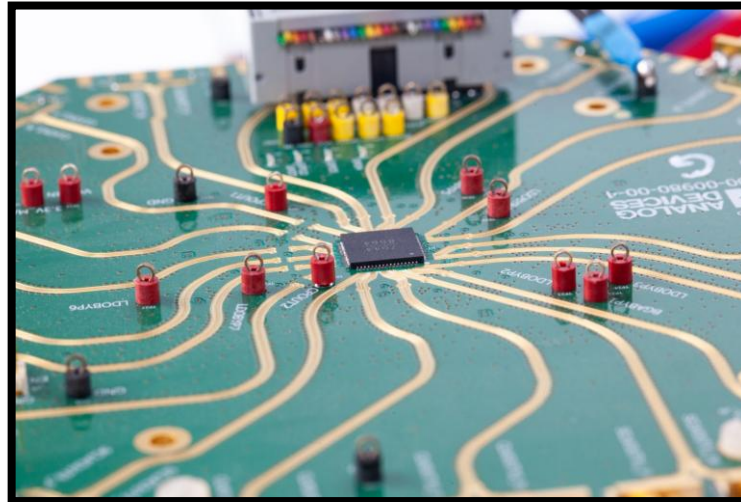
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DAQ is based on a AMD/Xilinx Zync Ultrascale+ ZU25DR

- 8 × 4.0 GS/s ADC
- 8 × 6.5 GS/s DAC



Module-to-module synchronization is based on Analog Devices HMC7044

- 3.2 GHz, 14-Output Jitter Attenuator
- Ultralow rms jitter: 44 fs typical