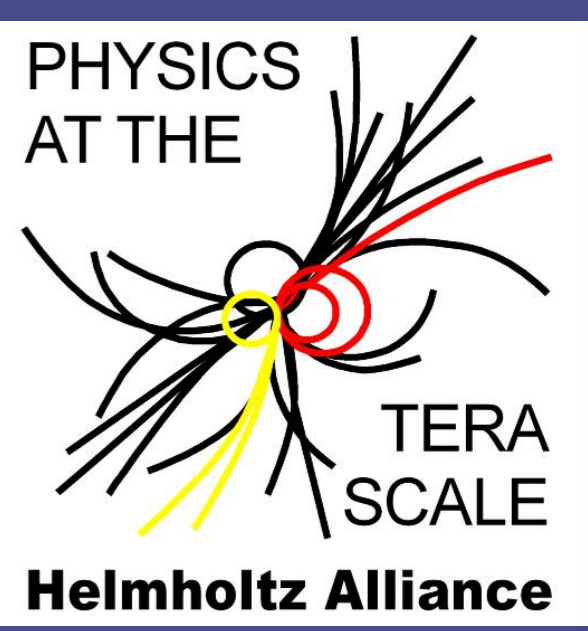




VLDT Node Heidelberg

Kirchhoff-Institut für Physik, Universität Heidelberg



The Virtual Laboratory for Detector Technologies (VLDT)

This laboratory will form the backbone of a network of the alliance partners formed to ensure a visible, efficient and long-lasting contribution of German groups to the future projects ILC and sLHC. The VLDT will develop, provide and maintain infrastructures and make them available to the Alliance. It will have three branches, electronics system development, sensor development and general detector test facilities.

HD Contribution

Within the Helmholtz Alliance Initiative the Heidelberg group plans to upgrade its research and development facilities in order to extend training and support to the German particle physics community. For that purpose it is planned to acquire laboratory (clean-room) workbenches including measurement equipment for five guest users, and to set up ten additional chip design and simulation workstations.

Current VLDT Staff

2 Engineers available for HGF support

Ralf Achenbach – Use of Lab Facilities

Markus Dorn – Access to Design / Simulation / Technology Kits

Clean Room

Semi-automatic wafer prober and wire bonder are installed in the clean room.



Support Offered to (External) Users

- ▶ Access to Lab Equipment and S/W Tools
- ▶ Instrumentation Tutorials (Testing, Bonding, Packaging)
- ▶ Software Support (Layout, Simulation)
- ▶ Submission Support (MPW, Engineering Runs, Production Runs)
- ▶ Submission Readiness Reviews
- ▶ ASIC Designer Style Guides
- ▶ Online Tutorials

Current Projects

VLDT equipment is currently used for the following projects:

- ▶ ATLAS Level-1 Calorimeter Trigger (Heidelberg)
- ▶ ATLAS Pixel data transmission (joint ZITI/Wuppertal Project)
- ▶ ILC CALICE Calorimeter development (Heidelberg with DESY)

And technological spin-offs:

- ▶ FACETS Project (Prof. K. Meier)
- ▶ PET Camera (Prof. H.-C. Schultz-Coulon)

Basis : ASIC Laboratory for Microelectronics Heidelberg

- ▶ Established in 1994
- ▶ Hosted by Kirchhoff-Institut für Physik
- ▶ Support Lab for Particle / Nuclear / Cosmic and Biophysics
- ▶ Contributions to HERA-B, HERMES, H1, ZEUS, ATLAS, LHC-b, ALICE, HEGRA, HESS, GERDA
- ▶ Related activities : Technical Informatics (KIP), Technical Informatics (ZITI, former Mannheim Group), International Graduate School on Intelligent Detectors
- ▶ TASKS : ASIC / FPGA Design, Test of Chips / Wafers / Boards / Systems, System Design, Simulation



Europractice and MOSIS Membership Access for HGF Members

AMIS (ON Semiconductor) Fabrication Processes :

include $0.7\mu\text{m}$ and $0.35\mu\text{m}$ high voltage CMOS and $0.5\mu\text{m}$ CMOS



AMS Fabrication Processes :

include $0.35\mu\text{m}$ CMOS, high voltage CMOS and SiGe BiCMOS



IBM Fabrication Processes :

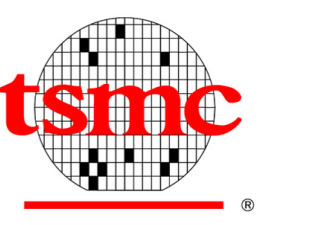
from 65nm to $0.25\mu\text{m}$ in CMOS and from $0.13\mu\text{m}$ to $0.50\mu\text{m}$ in SiGe BiCMOS



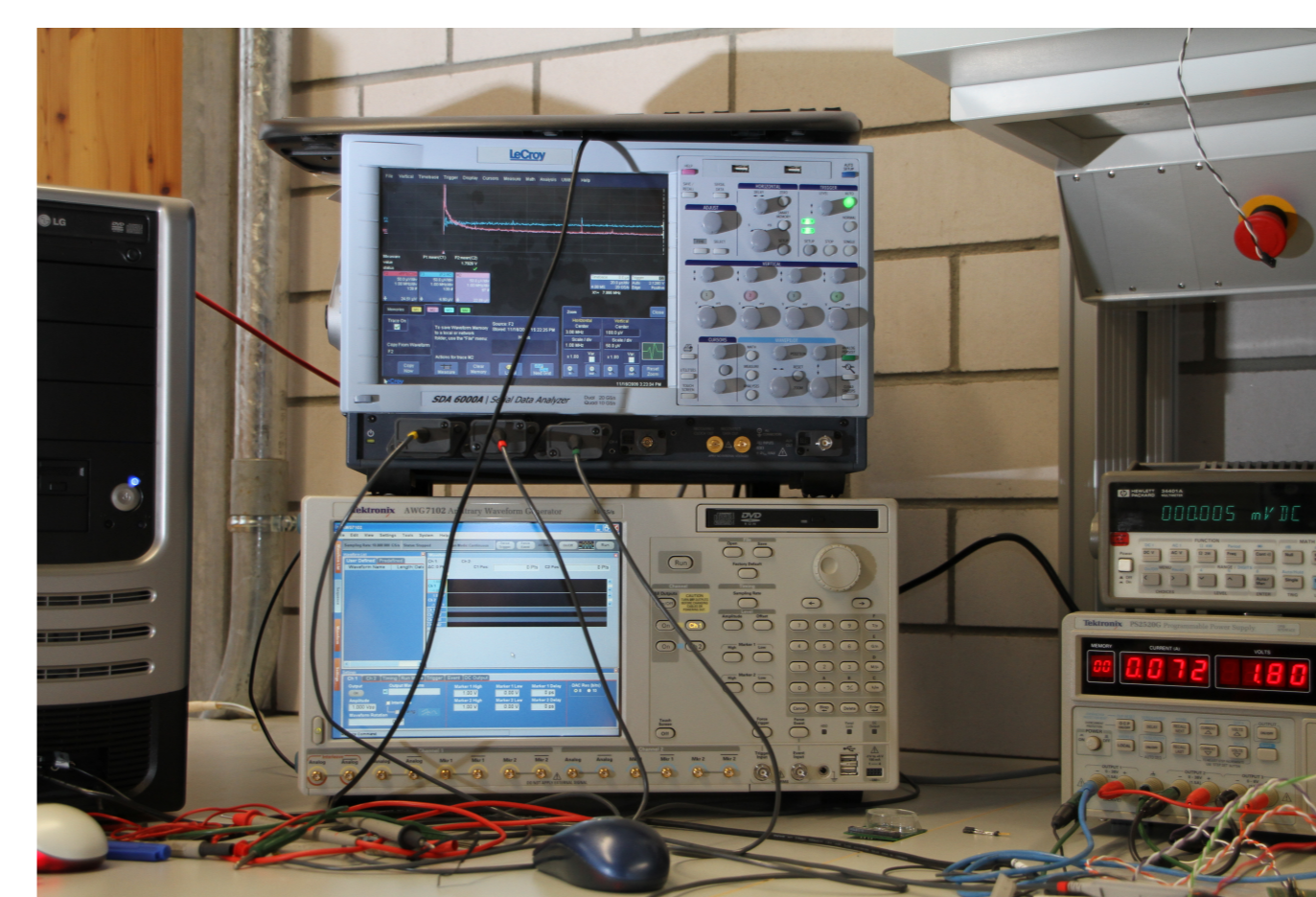
TSMC Fabrication Processes :

include $0.35\mu\text{m}$, $0.25\mu\text{m}$, $0.18\mu\text{m}$ CMOS

Design Kits are installed at KIP, contact the ASIC lab if you want to use them



Laboratory Equipment



State-of-the-Art Equipment for

- ▶ High speed (serial) link development and test
- ▶ Low noise high bandwidth analogue circuit testing
- ▶ BGA placing and mounting
- ▶ Medium throughput wafer testing

Access for HGF Alliance Projects

Remote access for ASIC lab members and registered HGF Alliance users via KIP Portal Server:

portal.kip.uni-heidelberg.de

Running local NXClient, Sun SGD (Secure Global Desktop) or SSH. Selected project partners with increased access needs can have VPN access.

PLEASE CONTACT ASIC LAB (RALF ACHENBACH) TO USE THIS INFRASTRUCTURE