

Dear all,

Here is the statement of work from SMU.

The ATLAS LAr front end to back end optical data link is a collaborative effort from institutes of CPPM Marseille France, ISN Grenoble France, KTH Stockholm Sweden, Academia Sinica Taiwan and the Physics Department at SMU USA. SMU coordinates the efforts. The readout system has about 1700 data links running at 1.6 Gbps based on the G-Link chips (HDMP-1022/1024). This link involves one ASIC designed by ISN using DMILL technology. The optics (optical transmitter and receiver) are designed and produced in Taiwan. The fiber procurement is KTH's responsibility. The fiber was identified and tested by KTH and SMU. SMU is responsible for overall design and system evaluation including components lab tests, irradiation tests and production tests.

The SMU group has one physicist (assi prof), one chip designer (assi prof from EE department), three full time electricians engineers, two EE graduate students.

The SMU group is working with the Oxford group on tests of the GOL chips up to ATLAS pixel radiation level, including that from the proposed LHC upgrade. The goal of this exercise is to evaluate the GOL chip for possible inner tracker readout for the upgrade version.

The SMU group is evaluating the Silicon on Sapphire (SoS) technology. A laser driver chip designed by us using the Peregrine UTSi technology will be evaluated in radiation (200 MeV proton, IUCF or MGH) in May. This is a VCSEL driver runs at 2.5 Gbps. Lab tests are completed on this chip.

The SMU group is also looking at a single chip solution for 10 Gbps optical links, based on the SoS technology. We just submitted a laser driver chip that drives both VCSEL and EEL. This chip is designed to run up to 10 Gbps.

The test of this chip will start in the summer of 2005. The single chip 10 Gbps optical link project will start from this summer and will be a 3 year program, with 3 design iterations. Chips at 3.125 Gbps may be available for testing by the end of 2006. The SoS technology is a very promising rad-hard, low power consumption, high speed, and cheaper (compared to 0.13 um CMOS) ASIC solution. This will be SMU's main program in the following three years, with close collaboration with Peregrine.

The SMU group also works with local industry on surface emitting 1310 nm lasers (the GSE laser) that have optical multiplexing capability. SMU will always follow the industrial development, evaluate chips and systems in radiation during our planned irradiation tests for the SoS project. This will give us the possibility of using what's available in industry.

We are open for collaboration with colleagues inside ATLAS and from CMS, CERN or any other places.

Cheers,  
Jingbo