



Progress Report on Joint ATLAS/CMS SLHC Opto-Electronics Working Group

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On behalf of the Working Group

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Outline



- Introduction
- Subgroups activities
- Summary



Brief History



- Joint WG started in 2005
- decided to form three subgroups at LECC-06, Valencia:
 - ◆ Lesson Learned/to be Learned from LHC
 - ◆ Irradiation Guidelines
 - ◆ Reference Link Test System



Group A: Lesson Learned and to be Learned from LHC



- K.K. Gan (Ohio State), F. Vasey (CERN), A. Weidberg (Oxford)
- ATLAS/CMS note submitted:
ATL-COM-ELEC-2007-001, CMS-IN-2007/066
<https://edms.cern.ch/document/882775/3.8>
- ◆ cost
 - material
 - personnel
- ◆ quality
 - today
 - long term monitoring
- ◆ technology
 - components
 - architectures
- ◆ document will be updated with operational experience



Group B: Irradiation Guidelines



- K. Gill, J. Troska, F. Vasey (CERN)
- K.K. Gan (Ohio State)
- P. Skubic, R. Boyd (Oklahoma)
- F. Rizatdinova (Oklahoma State)
- T. Huffman, C. Issever (chair), A. Weidberg (Oxford)
- J. Ye (SMU)



Group B: Irradiation Guidelines



- ATLAS/CMS note submitted:
<https://edms.cern.ch/document/882783/2.6>
- ◆ radiation environment
- ◆ sample size/failure criteria
- ◆ radiation tolerance test
 - fibers
 - VCSEL/PIN
 - ASICs
 - packaged modules
- ◆ document will be updated with more irradiation experience



Irradiation Results/Plan



- 2007 Irradiation:
 - ◆ fibers irradiation with Co^{60} by Oxford (Huffman et al.)
 - dosage: 50 Mrad
 - SIMM: < 0.05 dB/m
 - GRIN: 0.25 dB/m
 - ◆ VCSEL/PIN irradiation with 24 GeV protons
 - see talk by K.K. Gan
- 2008 Irradiation:
 - ◆ VCSEL/PIN irradiation and PIN SEU study by CERN
 - ◆ fibers irradiation with Co^{60} by Oxford
 - ◆ VCSEL/PIN/ASIC irradiation with 24 GeV protons by Ohio State, Oklahoma, Oklahoma State
 - ◆ Link-on-Chip, fibers with 230 MeV protons by SMU



Group C: Reference Link Test System



- S. Hou, P.K. Teng (Academia Sinica)
- J. Troska, F. Vasey (CERN)
- C. Bruno (INFN Perugia)
- K.K. Gan (Ohio State)
- C. Issever (Oxford)
- R. Rusack, A. Singovski (Minnesota)
- J. Ye (chair) (SMU)



Group C: Reference Link Test System



- ATLAS/CMS note submitted:
<https://edms.cern.ch/document/882784/2.0>
- ◆ define what need to be tested in a link
 - document will be updated with more testing experience
- ◆ build a test system that can be used by all institutions
 - avoid duplication of effort
 - proposal has been written
 - 1st prototype: summer 08
 - joint effort of CMS (Minnesota) & ATLAS (Ohio State/SMU)



Opto-Link Projects



- Versatile Link:
 - ◆ opto-link to interface with on/off-detector electronics (GBT)
 - ◆ see talk by A. Weidberg on Thursday
- Link-on-Chip:
 - ◆ silicon on sapphire with integrated VCSEL
 - ◆ see talk by J. Ye



Summary



- Joint ATLAS/CMS SLHC WG is alive and well
- 3 subgroups formed for more focused efforts
 - ◆ A: lesson learned documented
 - ◆ B: irradiation planning for 2008 started
 - ◆ C: planning for first reference link test system prototype
- achieve the goal of collaborative effort and results sharing