

Title:

Radiation hardness studies of VCSELs and PINs  
for the opto-links of the Atlas Semiconductor Tracker

To be presented by Suen Hou

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Abstract:

We study the radiation hardness of Vertical Cavity Surface Emitting Laser diodes (VCSELs) and Silicon PIN diodes that will be used for the Atlas Semiconductor Tracker (SCT) at the CERN Large Hadron Collider (LHC). The tests were conducted with 200 MeV/c protons and 20 MeV/c (average energy) neutrons of fluences up to  $8 \times 10^{14} \text{ cm}^{-2}$ . We report on the radiation damage and the annealing characteristics. The life time of VCSELs after irradiation was investigated at an elevated temperature up to  $80^\circ\text{C}$  for six months. The degradation of VCSEL light and PIN response were estimated for application at LHC.