



Contribution ID: 392

Type: **Parallel contribution**

Studies of VCSEL failures in the optical readout systems of the ATLAS silicon trackers and Liquid Argon calorimeters

Tuesday, 9 August 2011 17:40 (15 minutes)

The readout systems for the ATLAS silicon trackers and liquid argon calorimeters utilize vertical-cavity surface-emitting laser (VCSEL) diodes to communicate between on and off detector readout components. A number of these VCSEL devices have ceased to function well before their expected lifetime. We summarize the failure history and present what has been learned so far about the possible causes, and present lifetime projections for the devices that have not failed.

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Session Classification: Detector Technology and R&D

Track Classification: Detector Technology and R&D