



Contribution ID: 24

Type: **Oral presentation**

Application of Vertically Integrated Electronics to Intelligent Trackers

Thursday, 4 February 2010 14:00 (25 minutes)

At Super-LHC luminosity it is expected that the standard suite of L1 triggers for CMS will saturate. Information from the tracker will be needed to reduce trigger rates to satisfy the L1 bandwidth. Tracking trigger modules which correlate information from closely-spaced sensor layers to form an on-detector momentum filter are being developed by several groups. We report on a trigger module design which utilizes three dimensional IC technology to incorporate chips which are connected both to the top and bottom sensor, providing the ability to filter information locally. A demonstration chip, the VICTR, has been submitted to the Chartered/Tezzaron two-tier 3D run coordinated by Fermilab. We report on the 3D design concept, the status of the VICTR chip and associated sensor integration utilizing oxide bonding.

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Session Classification: Electronic circuits (3D and conventional)

Track Classification: Electronic circuits (3D and conventional)