

Embedded pitch adapters as a proposal for high-yield interconnection for strip sensors

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A status will be given on the proposal of the use of a second metal layer for the integration of pitch adaptors in the fabrication of large-area strip sensors for high energy physics experiments.

Summary

The interconnection of sensors and readout electronics is a subject of critical importance in the realization of the module design for high energy experiments like ATLAS. The sensors are made progressively larger, and the readout electronics smaller, and both contain increasingly more channels. The realization of the electronic connection between their channels is not trivial and becomes a yield issue when the experiment contain millions of strip channels. The question is not anymore if the bonding can be done, but if it can be done reliably enough to build a whole tracker.

A proposal to fabricate large area strip sensors with built-in or embedded pitch adapters have been made for the End-Cap part of the Inner Tracker in the ATLAS upgraded experiment. Considerations on noise, pick-up, cross-talk, and yield effect on the sensors have been taken into account in the design and fabrication of the sensors. Test on interstrip capacitance will be shown that reveal the importance of a proper design. Technological limitations will be discussed and results on the tests of the different batches fabricated will be shown.

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