

10th International "Hiroshima" Symposium on the Development and Application of Semiconductor Tracking Detectors, Xi'an, China

Contribution ID: 5

Type: POSTER

Results on 3D interconnection from AIDA WP3

Saturday 26 September 2015 19:27 (1 minute)

From 2010-2014 the EU funded AIDA-WP3 project invest established a network of groups working collaboratively on advanced 3D integration of electronic circuits and semiconductor sensors for applications in Particle Physics. The main motivation came from the severe requirements on pixel detectors for tracking and vertexing at future Particle Physics experiments at LHC, Super-B factories and Linear Colliders. To go beyond the state-of-the-art, the main issues are studying low mass, high bandwidth applications, with radiation hardness capabilities, with low power consumption, offering complex functionality, with small pixel size and without dead regions. The interfaces and interconnects of sensors to electronic readout integrated circuits are a key challenge for new detector applications.

WP3 was structured in eight subprojects sampling different 3D technologies using different vendors. Some subprojects investigated 3D technologies which have the potential to lead to high-density 3D interconnection processes but still have significant technological challenges. This included high density, high aspect ratio vias in via first and via last technologies. The SLID (Solid Liquid Interdiffusion) technology was used for high density interconnection of sensors and electronics or two electronic tiers. Others used more mature technologies with large diameter vias and standard bump bonding offering more modest possibilities for improvements of the detector performance but still considerable advantages compared to standard detector technologies.

This paper presents the final results of the AIDA WP3 project, summarize and compare similar results from other projects, and indicate future research activities in this field.

Primary author: MOSER, Hans-Guenther (MPI fuer Physik)

Presenter: MOSER, Hans-Guenther (MPI fuer Physik)

Session Classification: After dinner POSTER session, with drinks: (All presenters are requested/encouraged to attend their posters; All participants are requested to participate the session, with drinks!)

Track Classification: Electronics