Contribution ID: **38** Type: **Oral**

ALICE SILICON STRIP DETECTOR MODULE ASSEMBLY WITH SINGLE-POINT TAB INTERCONNECTIONS

Wednesday 14 September 2005 14:40 (25 minutes)

The silicon strip detector (SSD) modules cover the two outermost layers of the Inner Tracking System of ALICE. The SSD module assembly will be performed at three locations in Europe: Helsinki, Strasbourg and Trieste. After a tedious preparation period within the whole ALICE SSD collaboration, mass production of the SSD modules was launched during autumn 2004 in Helsinki. Presently all the sites are producing the SSD modules successfully.

Due to tight requirements of light structure and flexible geometry the so-called single-point tape-automated bonding (spTAB) with thin polyimide-Al cables has been chosen as interconnection technique. The technique is based on Ukrainian industrial technology. In an spTAB interconnection very reliable Al-Al bonds connect the front-end chips, hybrids and sensors together. The use of Al as conductor allows for low-force ultrasonic bonds to be performed gently at room temperature.

Presently, the spTAB interconnections are performed successfully at all three sites with bonding yield approaching close to 100%. This paper describes the phases in bond process tuning before achieving this result, including discussion on the most probable root-causes of failures and the long-term reliability of the interconnections. The interconnection reliability defines the lifetime of an SSD module as a significant part of the assembly.

Author: Dr OINONEN, Markku (Helsinki Institute of Physics)

Co-author: SSD COLLABORATION, ALICE (Helsinki - Kharkov - Kiev - Strasbourg - Trieste - Utrecht)

Presenter: Dr OINONEN, Markku (Helsinki Institute of Physics)

Session Classification: Plenary session P5