

ATLAS Tracker Upgrade

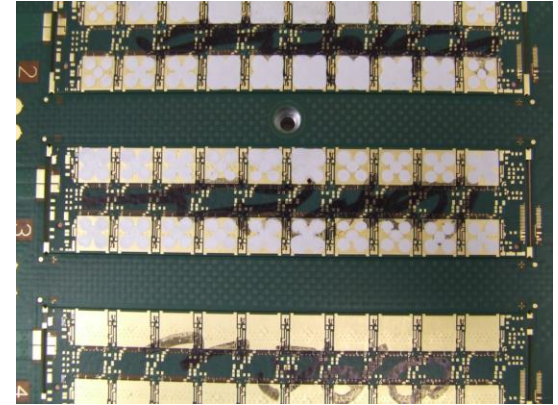
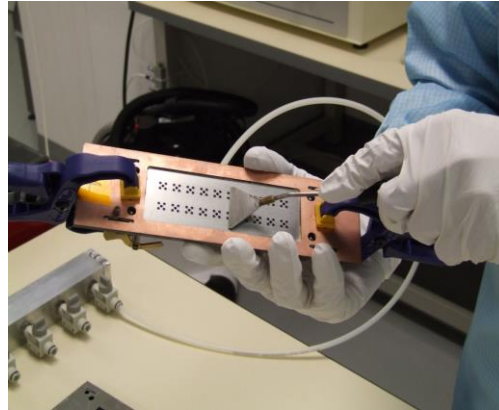
Team

Simon, Sam, Juergen, JW + Kostas and Chris

Main activities (responsible for WP 3.5: hybrid production)

- Gluing, bonding, vacuum (Simon, Sam)
- Readout tests (Juergen)
- Irradiation tests on cyclotron (JW) : **WP 5.7** (Paul Dervan)

Gluing: getting up to speed



+ tests

Measure glue thickness with Astro CMM ?

+ new ideas

- Rather than curing the glue at room temp (i.e. leave devices under vacuum overnight), can glue be cured at slightly raised temp (+35C) ?
→ develop heating panels etc

Advantage: curing in a few hours; faster throughput

- to be tested by Simon and Sam

Cleanroom

- New bonder well exercised by Simon
- bid for new apparatus:

Bond Pull Tester

Current model



Dage BT 22

Proposed purchase

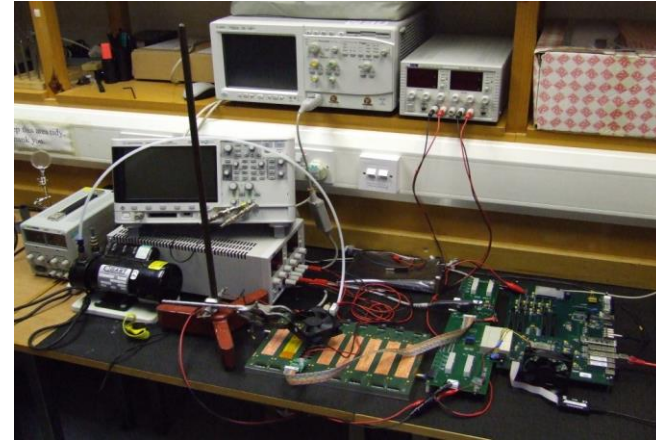
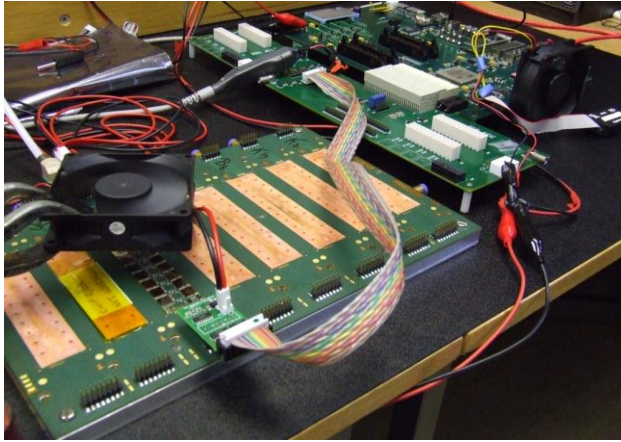


Dage 4000

Dry Storage



Testing hybrid (ex-Liverpool)



Lots of technical details overcome by Juergen

- cooling
- maintain flat via vacuum plate
- sensitive to power supply settings; noise

Next

- Test hybrid glued and bonded in Bham
- Understand hybrid operation in detail (plots, as for SCT)

Irradiations

- **Irradiation group:**

David Parker's cyclotron team;

Kerry Parker and Paul Hodgson (Sheffield; **scanning**);

Paul Dervan (Liverpool; **testing**);

JAW (fluence measurement).

- **Hardware:** Richard French and Hector Marin-Reyes (Sheffield)

- **Programme**

Irradiate devices in Bham; test in ATLAS institutes (L'pool mainly so far)

Plan

Continue – lots to do + plan a combined testing effort: bond irradiated devices to pcbs in Bham and then test in Sheffield.

Problems: local heating

1 μ A beam of 27MeV protons deposits 1W approx in 300 μ m of silicon.

So, although in cold box (nitrogen at -10C), devices may anneal.



Irradiations so far

Regular Tuesday runs on cyclotron → 105 objects irradiated

- 4 carbon fibre
 - 3 materials
 - 2 sets of JFETs
 - 96 ATLAS prototype silicon sensors
- **Main Barrel ATLAS12 finished**

Imminent:

- Barrel ATLAS12 mixed irradiation
- Barrel ATLAS12 glued sensors
- Endcap ATLAS12 (+60 sensors)
- Pixel V (+8 single sensors)
- Full size ATLAS12 (Standard and Slim Edge)

Summary: programme well under way.

