

# Univ. of Sheffield

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September 7-8, 2022

Future UK Silicon Vertex & Tracker R&D Workshop — Birmingham



# Sheffield Semiconductor Detector Development Facility

- Keen interest in silicon microstrip detectors (currently building modules for the ATLAS ITk Strip detector), also interested in R&D with CMOS. Sheffield group also has a strong interest in the DAQ (experience with current ATLAS SCT, ITk)
- Temperature controlled ISO 14664-1 Class 5 and 7 clean room facility
- Facility was opened in the autumn of 2015 and is currently being used to construct components for the ATLAS High Luminosity upgrade
- ~17m<sup>2</sup> of ISO Class 5 clean room and ~20 m<sup>2</sup> of ISO Class 7 clean room to allow different project to be worked on simultaneously without interference
- Vacuum and a plumbed nitrogen lines (departmental supply)
- Large dry-store
- Facility includes:
  - One Hesse Bonjet BJ820 high speed fully automatic wire wedge bonder
  - Inseto Dage 4000+ pull tester
  - Wentworth probe station (Pegasus S200FA)
  - 3 ALiBaVa Systems (e.g., have been used to test ATLAS 7 mini sensors pre and post irradiation for annealing)
  - Metrology station consisting of an OGP Smartscope Flash CNC 200

# Current Welding Capabilities

- Keen interest in modern technologies such as micro-channel cooling and design experience in vortex air cooling at the irradiation facility at CERN, for AIDA 2020

## Orbital welding

- Fully fitted 25m<sup>2</sup> welding/testing lab
- Swagelok M200 welding system
- Series 4 and 5 weld heads with access to series 8 head, covering sizes 2.0mm to 12.70mm dia.
- Inspection metrology equipment for R&D including: Metal cutter, Hot and cold resin potting and Polishing kit
- In house cutting/preparation capability on wire EDM
- Experienced expert orbital welding staff on call

## Testing

- Leybold modulus 200 leak detector
- Smartscope inspection suite seated in clean room environment
- Large length vernier at 1500mm
- Standard lab/workshop measuring equipment, hand tools, multimeters & temp gauges..etc
- Bespoke pressure/leak checking vessel for ATLAS strip barrel work
- Environmental Lab monitoring system linked to labview