Development Plan in Sydney

Chia-Ling HSU, University of Sydney, 30 Nov 2022, DAQ/TRG Workshop 2022, Nara Women's University

Sydney group

Person power:

- Academics: Dr C.-L. Hsu, Prof K. Varvell

- Potential students working on TRG projects:

  - 1 PhD student

  - 1 honours student

 - Short-term undergrad students

Sydney group
Planned developments (with A/Prof Y.-T. Lai):

- CDCTRG:

  - Upgrade the existing short tracking algorithm

- KLMTRG:

  - Investigate the possibility of implementing KL clustering in KLMTRG

  - μμ-B2B tracking

- Suggestions or potential short-term projects for young students are welcome. Contact: chia-ling-hsu@sydney.edu.au

Sydney group
## Plan on short-tracking upgrade:
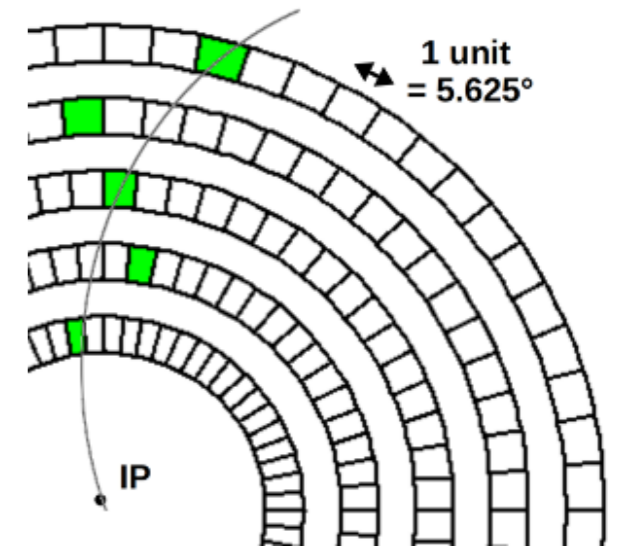
- Quick track-finding without complicated logic processing.
  - High-pz or low-pt tracks: toward end-cap or curling back
- Based on the current pattern-recognition algorithm:
  - 5 SL by 64 bits bitmap to 5 SL by 128 bits
  - 137 patterns in present, extend further for more precise patterns
- Execution plan:
  1. Simulation studies using particlegun to identify all patterns
  2. Performance study: how trigger rate can be reduced
  3. Firmware making, integration into GRL firmware, then performance check.
- Some ideas for long-term upgrade:
  - Extended into 9 SL version: for 3D pre-processing

Local resources:

- Two boards for training purpose:

  - Artix-7   Spartan-6
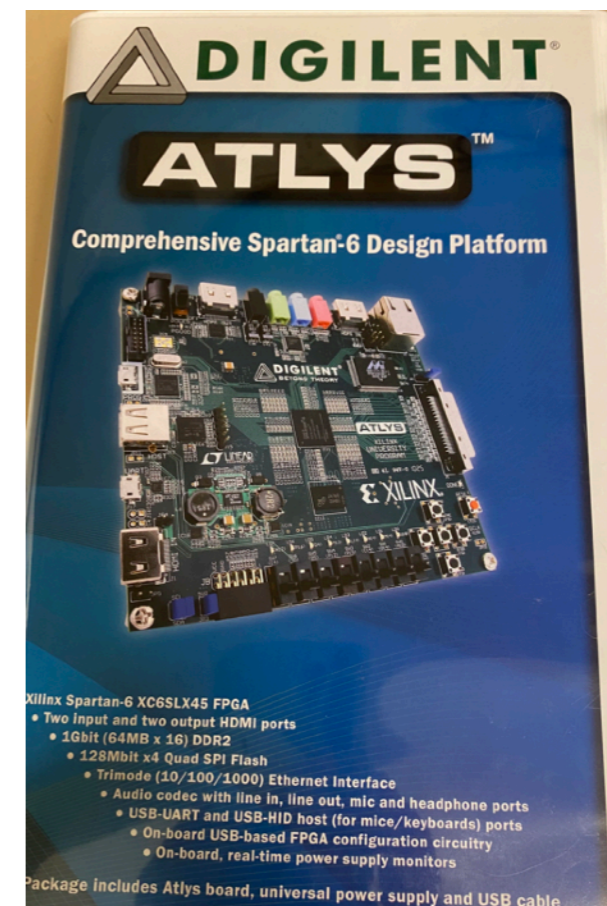
  - No Xilinx software license for now.