

# Outcomes of the NZA Instrumentation Workshop

- Very successful meeting. Many thanks to Royal Society of New Zealand, MoRST, NZ Universities, CERN and Alick MacPherson.
- Report to: NZ & Austr. Govts and Universities; CERN.
- Letter/Report: RSNZ to ARC?; RSNZ to Aust. Ac. of Sci.?; MoRST to ARC?; MoRST to DEST?; FRST to ARC?; FRST to DEST?
- Diverse range of high quality/innovative instrument related work in NZ with potential links to HEP experimentation.
- Broad scientific program in NZ. However, the CMS opportunity can provide NZ with a strong HEP program at the peak of the field, which is currently lacking.
- Strong interest in pixel-detector development in both HEP and related areas, (principally medical related).
- Clear benefit of HEP program to NZ science and medical technology, but also considerable related *existing* capability which can help a NZ HEP program.

- Strong desire to strengthen international scientific links.
- Student exchange to/from CERN/CMS collaborator: 1 per year?
- Short term visits:
  - students, post-docs, faculty.
  - Particle physicists AND related technologists (eg. IT specialists)
- What is necessary base level of effort from NZ for HEP program at CMS: ? 3 FTE, building to ?? FTE for LHC upgrade.
  - (Australia also needs to maintain effort and develop the level of participation in HEP)
  - Potential HEP (Instrumentation Specialist) academic post at Canterbury? Others?

## New Zealand – Australia Collaboration.

1. Report on Workshop to CMS, CERN, NZ & Austr. Govts.
  - a. RSNZ letter/report to ARC?.
2. Identify at least one project where collaboration can start immediately. Commence arrangements to get such a project underway.
  - a. ??? Mini-strip detector array for the Synchrotron ???
  - b. ??? PET Camera development ???
3. Identify at least one future project where a joint approach can be planned: Joint funding agency application; sharing of project tasks; collaborative management of project; shared equipment and expertise.
  - a. Pixel Program: MEDIPIX?, MAPS? PILATUS?
  - b. Working towards: LHC upgrade?
4. Combined proposal for Tier -2 site for Australia-New Zealand
5. Exchange of formal letters between Universities, Institutes, funding agencies expressing the desire to develop close collaboration in the area of instrumentation.
6. NZ participation in annual meetings of Experimental HEP Consortium (Aus): Melbourne, Sydney, Wollongong ...

7. Develop formal linkages with AUSHEP (Australian Institute for High Energy Physics) by NZ institutes.
8. ??? Commence discussion to set up a cross-Tasman research centre in particle and astro-particle physics.
  - a. (Must understand differences in NZ and Australian funding opportunities.)
9. Set goals for PhD student exchange, various periods?
10. Co-host visits by scientists on lecture/research tours to NZ and Australia (As well as trans-Tasman lecture/research visits)
11. Decide on a regular (bi-annual?) workshop in high energy physics, instrumentation and related, perhaps alternating between instrumentation and theoretical workshops.
12. Sharing facilities at home institutes, CERN, elsewhere.
13. Covering participation on international committees to increase engagement in international program management: ICFA, ACFA, OECD (HEP), ACFALC, LC Instrumentation, ...
14. Co-host International Conference or Workshop:
  - a. Immediate proposal to host ICFA Nuclear Instrumentation School.

# Future Areas of Interest for HEP Shared Projects

1. Detectors for HEP upgrades:
  - a. ATLAS/CMS upgrades
  - b. ??? Belle upgrade
2. GRID Projects
3. New experiments:
  - a. Linear Collider
4. Astro-particle experiments:
  - a. Ice Cube
  - b. AUGER
  - c. LOFAR or related ?
5. Accelerator Physics?
  - a. Synchrotron development
  - b. LHC, SLHC
  - c. SuperKEKB
  - d. LC projects (CLIC?)
6. Space-based experiments:
7. Pixel Detectors for Synchrotrons
8. PET and other Imaging Detector Projects