



The first Italy-Australia Symposium on High Energy Physics was held at the School of Physics at the University of Melbourne on Thursday July 12th, 2012 with the aim of discussing existing and potential new avenues for collaboration between the two communities. The day involved presentations and associated discussions. Topics of discussion included: neutrino phenomenology and dark matter searches at the Gran Sasso Laboratories of the INFN and the LHC (Large Hadron Collider) at CERN, detector development in diamonds, heavy ion research at the LHC and accelerator technology.

Following the presentations and discussions the symposium resolved, via the signing of a Joint Declaration, to actively pursue avenues for collaboration in areas of common endeavour between Australia, represented by the ARC Centre of Excellence for Particle Physics of the Terascale (CoEPP) and Italy, represented by the Italian Institute for Nuclear Physics (INFN), in the general area of particle physics. The following specific areas were highlighted for initial exploration of common projects:

- *Development of diamond detectors for particle physics experiments.* Complementary capability and expertise at the University of Melbourne and the Università degli Studi di Roma Tor Vergata in the development, including detector lithography, assembly, and testing of novel diamond detectors, were identified and it was resolved to pursue a common project in this area of research.
- *Collaboration in future Dark Matter search experiments.* Advanced dark matter searches are underway in the Gran Sasso laboratory in Italy. It was resolved to pursue the potential for a southern hemisphere partner to these efforts in Australia. It was suggested that a suitable site may be found considering the prevalence of mining in Australia.
- *Research and development in accelerator physics.* The INFN has a history of particle accelerator development at the forefront of the field. With the successful operation of the Australian Synchrotron and the active high energy physics program in Australia it was resolved to pursue common projects in particle accelerator R&D.

PROGRAM

08.50 Opening and welcome, *Oscar MOZE*, Science Attaché, Embassy of Italy

INTRODUCTION – *Chair: Elisabetta BARBERIO*, School of Physics, University of Melbourne

09.00 **High energy physics in Australia**, *Bruce MCKELLAR*, University of Melbourne

09.15 **High energy physics in Italy**, *Antonio MASIERO*, Vice-President INFN

DETECTORS – *Chair: Shahram RAHATLOU*, Università ‘La Sapienza’, Roma

09.30 **Diamond detectors in Italy**, *Anna DI CIACCIO*, Università di Roma ‘Tor Vergata’

09.45 **Diamond detectors in Australia**, *Elisabetta BARBERIO*, University of Melbourne

10.00 **Discussion**

ACCELERATORS – *Chair: Geoffrey TAYLOR*, University of Melbourne

11.00 **Accelerators in Australia**, *Mark BOLAND*, University of Melbourne

11.15 **Accelerators in Italy**, *Sergio BERTOLUCCI*, CERN

11.30 **Discussion**

NEUTRINOS AND DARK MATTER – *Chair: Biagio DI MICCO*, Università di Roma ‘Tre’

14.00 **Systematic approach to neutrino mass**, *Nicholas RODD*, University of Melbourne

14.15 **Dark matter searches in Italy**, *Aldo MORSELLI*, Università di Roma ‘Tor Vergata’

14.35 **Dark matter searches in Australia**, *Robert FOOT*, University of Melbourne

14.55 **Dark matter searches at the LHC**, *Ahmad GALEA*, University of Melbourne

15.30 **Discussion**