TRIUMF Assists Argentinian Research Facility

TRIUMF is Canada’s representative in the international network of physics research laboratories that collaborate and cooperate in research and experiments, large and small. As a member of this international subatomic physics community, TRIUMF welcomes foreign physicists, while Canadian researchers make use of complementary research facilities around the world. At any given time, there are many international researchers at TRIUMF, and many Canadian physicists at laboratories in Europe, Asia and the United States.

As a leading cyclotron facility in the international physics community, TRIUMF must respond to its obligation to share knowledge and techniques that have been developed at the facility. In the fall of 1999, the International Atomic Energy Authority (IAEA) of Vienna, Austria funded Dr. Tom Kuo from TRIUMF to visit the Atomic Center Ezeiza, (CAE), in Buenos Aires, Argentina, where he helped them increase the production of medical isotopes from their CP42 cyclotron. This was followed in the fall of 2000 by CAE physicist, Mr. Roberto Strangis, visiting TRIUMF, also under the auspices of the IAEA.

During his three months at TRIUMF, Roberto gained some valuable first hand experience of current theory and practice in cyclotron operations. He was fortunate to be able to work with veteran cyclotron physicist, Dr. Tom Kuo, who provided invaluable mentorship to the young visitor. Although Tom recently retired from TRIUMF, he is still very active and continues to be seen working around the laboratory most days. He joined TRIUMF from ‘The Cyclotron Corporation’, a U.S. company that manufactured the CP42 cyclotron. He is an expert in accelerator physics and has helped solve many technical problems with TRIUMF’s cyclotrons.

Roberto’s home facility, the CAE, is the cyclotron radioisotope production facility of the Comision Nacional de Energia Atomica (CNEA) in Buenos Aires. They purchased a refurbished CP42 cyclotron from Kraftanlagen Heidelberg in Germany, since the original manufacturer is no longer in operation. The CAE use their cyclotron to produce thallium-201 and FDG (a radioactive pharmaceutical) for use in the hospitals in Argentina. Roberto is one of four staff who operate and maintain the cyclotron. With an excellent command of English, he fitted in easily to the TRIUMF scene, and when it came time to leave, he went out of his way to emphasize how much he had enjoyed his time at our Canadian facility. While he was here, Roberto’s salary was paid by the CAE, with his travel and accommodation expenses being funded by the International Atomic Energy Authority.

Furthering the links with the CAE in Argentina, TRIUMF is currently working on a contract for replacement components for their CP42 cyclotron, which are once again being funded by the IAEA. Providing this type of technical assistance to facilities in emerging economies is another way TRIUMF fulfills its international responsibilities and furthers Canada’s reputation abroad.
Towards the end of the year 2000, two scientists from Nanjing University in China visited TRIUMF. They were here to collaborate with the ATLAS group on the hadronic end cap modules for the ATLAS detector. This detector is one of two large general purpose detectors designed to exploit the full discovery potential of the Large Hadron Collider (LHC) at the European Laboratory for Particle Physics (CERN). Its prime physics goal is to understand the nature of mass. 1700 collaborators from 150 institutes worldwide are involved in the construction of this experiment, with Nanjing University being one of them. Professors Jingwu Zhao and Ming Qi were sent here to observe and work with the manufacturing and assembly of the end cap modules. Nanjing University is responsible for manufacturing the mechanical components for the assembly of TRIUMF’s modules. These modules are then shipped to CERN, which are assembled into a large wheel in the ATLAS detector.

Twenty-five scientists have also been visiting TRIUMF from a number of different countries to take part in experiment E778, the Coulomb Nuclear Interference Experiment (CNI) with CHAOS (Canadian High Acceptance Orbit Spectrometer). This TRIUMF project is a precision measurement of the pion proton elastic scattering in the forward angle region where there is competition between the coulomb and nuclear forces. This experiment is made possible by the CHAOS geometry, unique in the world and designed by TRIUMF staff, and an array of additional detectors custom built for this experiment. Collaborators involved in the CNI experiment hail from Australia, Canada, Germany, Italy, Russia, Switzerland and the USA, with six local contributors from TRIUMF.

TRIUMF is proud to be involved in high caliber scientific endeavors, all of which help increase the understanding of the universe in which we live.