



TRIUMF

A Great Engineering Achievement in Canada

The Tri-University Meson Facility on the south campus of the University of British Columbia was initiated as a project in 1968 by a consortium of three Canadian universities - British Columbia, Simon Fraser and Victoria - with a continuing contribution from the National Research Council. The number of members has grown with time to include 11 full-time and six associates. Over the past 25 years, it has been recognized as one of the world's leading 'factories' for the study of particle and nuclear physics, molecular and materials science and nuclear medicine - in other words, both basic research and research related to commercial markets and to the process of innovation.

The principal element in the Facility has been the 500 MeV cyclotron, the world's largest, which was commissioned in 1974. The machine itself is a special type of accelerator that drives immense numbers of negative hydrogen ions to high energies as they follow a spiral path through it to strike different kinds of targets creating intense beams of muons, pions, neutrons and other elementary particles depending on the experiment or application being studied. The magnet for it, alone, weighs around 4000 tons and has a diameter of 18 metres. The current required by the magnet is 18,500 amps and the electric field frequency is 23 MHz. The staff of TRIUMF has grown to over 450 scientific, engineering and other people and at least 25 countries have sent researchers to use it, some under international agreements for collaborative research.

Over the years, additional equipment has been added to enhance the Facility, and these have also added to the great range of work that can be carried out using it. For example, the Facility now includes a positron emission tomograph (PET scanner), one of only three operating in Canada, for specialized brain scans. Currently, TRIUMF is operated under a licence from the Canadian Nuclear Regulatory Commission.

TRIUMF, therefore, is a notable achievement for the engineering involved in its design, construction and operation as well as for the science incorporated into its design and for the basic and applied research and training it can be used to carry out. In other words it has been, and still is, an example of teamwork involving both engineers and scientists. IEEE recognized TRIUMF as a Milestone in electrical engineering in 2010.

One Liner: ***Canada's world-class particle accelerator laboratory.***