

TRIUMF
Canada's National Laboratory
for Particle and Nuclear Physics



NEWS RELEASE

FOR IMMEDIATE RELEASE

May 17, 2006

TRIUMF successfully commissions Canada's first superconducting linear particle accelerator (Vancouver, B.C.) – The TRIUMF national laboratory has achieved a new milestone by successfully commissioning a superconducting linear accelerator (linac) at its subatomic physics complex situated on the UBC campus in Vancouver. The superconducting linac will accelerate rare isotopes created by the TRIUMF cyclotron beam. This development positions TRIUMF as the world's premier facility for the study of nuclear physics and astrophysics, addressing fundamental questions of the universe's existence.

Particle accelerators are used to investigate many areas of science ranging from medical science to study of the evolution of the universe. Since 1968, with the construction of the world's largest cyclotron accelerator, the TRIUMF laboratory has been a leader in accelerator technology. Currently TRIUMF operates seven accelerators of various sizes, each based on one of three different technologies operating at room temperature: cyclotron, radio frequency quadrupole, and the drift tube linac. TRIUMF has been a world leader in using these accelerators to produce some of the most exotic short-lived atoms in the universe in order to address a wide range of scientific questions, as well as to produce such radioisotopes for use in medical diagnostics worldwide.

TRIUMF Science Director Jean-Michel Poutissou congratulated the staff associated with the project for their hard work, stating that “this is a tremendous achievement which brings new technology to BC and a unique research tool for Canadian researchers and for the nuclear physics research community worldwide.”

Over the past four years, TRIUMF has built on its expertise at accelerating short-lived exotic isotopes by developing and constructing a new type of linac based on superconducting radio-frequency cavities. The 20 superconducting accelerator cavities are cooled to -269°C (just 4° above absolute zero) with liquid helium. This technology has been used at other laboratories for other applications, but this is the first time it has been developed for accelerating short-lived exotic isotope beams in Canada.

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under a contribution through the National Research Council of Canada

This rare isotope superconducting accelerator, called ISAC-II, is being built in two stages. The first stage is now complete and successfully accelerated its first beam in April 2006. The final stages are scheduled to be constructed during the next four years. Along with the ISAC-I facility already in operation at TRIUMF, the new ISAC-II accelerator will be used to accelerate short-lived exotic isotopes produced by TRIUMF's large cyclotron.

Professor Brad Sherrill, University Distinguished Professor of Physics at Michigan State University, and Chair of the American Physical Society Division of Nuclear Physics, said "Production, separation, and acceleration of atoms that live for only a few seconds or less is a very difficult task. The group at TRIUMF has done an outstanding job at advancing this science and it is exciting to hear that the new ISAC-II facility has reached a key milestone. The new capabilities will make TRIUMF the best place in the world to do experiments with accelerated beams of exotic isotopes."

These developments were made possible by generous financial support from the Federal Government of Canada through the National Research Council of Canada, and from the B.C. Provincial Government.

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Figure 1: Soul of the new machine. TRIUMF technicians assembling one of the superconducting accelerator modules of the new ISAC-II facility.

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