

PC-CANS - Conceptual Design of a Compact Accelerator Based Neutron Source for Canada

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In an effort to close the neutron gap in Canada a prototype, compact accelerator-based neutron source for Canada (PC-CANS) is proposed for installation at the University of Windsor. The PC CANS is envisaged to serve two neutron science instruments, a boron neutron capture therapy (BNCT) station and a beamline for fluorine-18 radioisotope production for positive emission tomography. To serve these diverse applications of neutron beams, a linear accelerator solution is selected, that will provide 10 MeV protons with a peak current of 10 mA within a 5% duty cycle. The accelerator is based on an RFQ and DTL with a post-DTL pulsed kicker system to simultaneously deliver macro-pulses to each end-station. The neutron production targets for both neutron science and BNCT will be of Beryllium and engineered to handle the high beam power density. A staged approach is foreseen for ramping the power. Conceptual studies of both the accelerator and the target-moderator-reflector (TMR) will be presented.

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Facility Updates

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