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(G*) Design Considerations for a Proton Linac for a Compact Accelerator Based Neutron Source

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Compact Accelerator-based Neutron Sources (CANS) offer the possibility of an intense source of pulsed neutrons with a capital cost significantly lower than spallation sources. A prototype, Canadian compact accelerator-based neutron source (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 (PET). To serve these diverse applications, 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. Several choices of Linac technology are being considered and a comparison of the choices will be presented.

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