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Beam delivery system for BNCT at Tokyo Institute of Technology

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Boron Neutron Capture Therapy (BNCT) is useful for cancer therapy. To generate safe and efficient neutron beams, we accelerate 2.5 MeV protons and irradiate a lithium target. This is an endothermic reaction that avoids activation of the accelerator and produces neutrons of relatively low energy. We are designing a beamline to deliver such protons to a lithium target. Tokyo Institute of Technology has been developing a high duty factor RFQ in collaboration with Time Co. A 5% demonstrator is already in practical use. This paper describes a lossless beam transport system from the RFQ to the lithium target. The beamline consists of a quadrupole magnet, a bending magnet and a multipole magnet. The bending magnets prevent the backflow of neutrons into the RFQ. The expected beam current is 20 mA. The results of the design study of this beamline will be presented at the conference.

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Footnotes

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Yes

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