

DTL studies for the LANSCE future front-end upgrade at LANL

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LANSCE accelerator complex was successfully supporting nuclear science research at LANL for more than 50 years. However, the need of the upgrade of the linear accelerator becomes immanent due to development of the modern accelerator technology, and due to inevitable aging of the existing equipment. The first stage of the planned upgrade of the linear accelerator at LANSCE includes the replacement of the outdated proton and H- Cockroft-Walton sources with the modern RFQ accelerator, and development of the new DTL. The proposed DTL is designed to accelerate protons and H- ions simultaneously, just as the existing accelerator, from 3 MeV –the output energy of the RFQ, to 100 MeV, that will allow us to keep existing Coupled Cavities Linac (CCL) intact. Presently existing megawatt-class RF power amplifiers will be used in the proposed new DTL. The details of the proposed design of the DTL will be given in the present paper. The details will include the main linear accelerator parameters, like synchrotron and betatron oscillations frequencies, as well as the developed techniques for the design studies.

Footnotes

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