High-power proton linear accelerator technology at CERN

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The construction of Linac4, a 160 MeV H- linac started in 2008 and is now in the beam commissioning phase. The RFQ and MEBT line have been successfully commissioned; and installation and beam measurements of the 50 MeV DTL will progressively take place during 2014.

Linac4 was conceived as the normal conducting front-end for a Superconducting Proton Linac (SPL), providing 5 GeV protons for a future neutrino facility at CERN. In the last 2 years the CERN infrastructure for the construction, surface treatment and testing of superconducting cavities has been upgraded to be compatible with the prototyping of a 4-cavity SPL type cryomodule. The 704 MHz 5-cell Niobium cavities, presently being built and tested at CERN are also of interest for several other potential future projects at CERN and for this reason the R&D effort is well supported over the coming years.

This paper reviews the context and status of the 2 projects and highlights some of the technological developments, which have been done at CERN and which are foreseen within the next years.