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# The Linac4 project



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Technical Design Report (2006) <a href="#">↗</a>	meetings of the Work-package holders	Beam dynamics
Parameter table	Linac4 review meetings (Machine Review Committee) <a href="#">↗</a>	Civil Engineering: Integration <a href="#">↗</a>
Documentation	Collaboration Meetings	PSB Beam Dynamics Working Group <a href="#">↗</a>
Seminars and conference presentations	Accelerating structures: structure design meetings, general meetings	document templates <a href="#">↗</a>
Management and Organisation Structure <a href="#">↗</a>	PSB injection meetings (AB/BT group) <a href="#">↗</a>	hardware baseline (EDMS) <a href="#">↗</a>
Software	Diagnostics Working Group meetings	Linac4 safety file (restricted access) <a href="#">↗</a>
	Booster Commissioning Working Group meetings	Upgrade to high duty cycle
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# project description

The goal of the Linac4 project is to build a 160 MeV H<sup>-</sup> linear accelerator replacing Linac2 as injector to the PS Booster (PSB) and to modify the PSB injection for the Linac4 beam. The beam brightness out of the PSB is expected to increase by a factor of 2.

Linac4 is designed to become the first section of a low-power Superconducting Proton Linac (SPL) replacing the PSB. It will be located in a building that allows the extension to the SPL without interruption of physics, and could be upgraded to higher duty cycle for a high-power SPL if required by the physics programme. The PSB will deliver beam for physics using the new injector at start-up 2013, reaching its maximum performance after a few years of operation. The main Linac4 beam parameters are available [here](#).

Linac4 is composed of an ion source, a Front-end (Radio Frequency Quadrupole and a chopper line), an Alvarez Drift Tube Linac (DTL), a Cell-Coupled Drift Tube Linac (CCDTL) and a Pi-mode structure (PIMS), for an overall length of 86 metres. A 70 m long transfer line joins the present Linac2 to PSB line. The RF accelerating structures will operate at 352.2 MHz frequency, re-using some RF equipment from LEP (klystrons, circulators and waveguides) and taking advantage of existing RFQ technology. Charge exchange injection will be implemented in the PSB, together with the modifications required in the PSB injection line to cope with the higher injection energy.

Although the duty cycle for the PSB and for the low-power SPL does not exceed 0.1%, all the accelerating structures are designed for a maximum duty cycle of 5%, to allow for future operation of Linac4 as the first part of the high-power SPL. Most of the hardware components (accelerating structures, magnets, RF high-power components, etc.) will be built for high duty cycle operation, while electronics (power supplies, etc.) and infrastructure (cooling, electricity) will be dimensioned for the low duty cycle. Linac4 will be able to operate without modifications for the low-power SPL (LP-SPL).

-- FrankGerigk - 12 Jun 2007

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This topic: [SPL > Linac4Web](#)

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