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The ELIMED transport and dosimetry beamline for laser-driven ion beams

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Nowadays the innovative particle acceleration technique based on laser-target interaction, represents a promising alternative to the conventional one. Nevertheless the peculiarities of the laser-accelerated ion beams, as the broad energy and angular distribution and the low reproducibility make necessary the development of dedicated non-conventional transport devices in order to obtain suitable beams for multidisciplinary applications, such as the hadrontherapy. At this aim, a contract has been signed between the INFN-LNS and Eli-Beamlines and provides the realization of a whole beamline, named ELIMED, completely dedicated to the transport, the diagnostic and the dosimetry of laser driven ion beams.
The transport devices will be composed of a set of permanent quadrupoles, located few cm downstream the target, and able to collect, focus and pre-select in energy laser driven beams up to 60 MeV/u , and an energy selector system made of conventional resistive magnets. Anyway the in-air section consists of an ionization chamber, of a SEM detector and of an innovative Faraday Cup, accurately designed to optimize the dose measurement of high-pulsed ion beams. The detailed description of the whole ELIMED beamline, which will be installed in Prague within the 2017, will be reported.

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