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The new proton beam delivery line of the TOP-IMPLART accelerator

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A new proton beam-delivery line for the TOP-IMPLART linac is under assembly and testing at the ENEA Frascati Research Center. TOP-IMPLART is an RF pulsed linear accelerator developed for medical applications, consisting of a 425 MHz, 7 MeV injector, followed by eight accelerating SCDTL modules operating at 3 GHz, driven by two 10 MW peak power klystrons. Proton beam can be accelerated at 63 MeV or 71 MeV (other energy values can be achieved by suitable degraders) in 3 μ s pulses with a typical repetition rate of 25 Hz. Following the experience gathered in multi-year irradiation campaigns based on the use of a passive spreading in air of the beam, the new line employs a magnetic scanning system and has been designed to accommodate the requirements of different targets, for multipurpose applications ranging from radiobiology experiments, test of innovative dosimeters, up to qualification of components in the field of aerospace. The paper describes the setup, the monitors of the parameters of interest (dose, fluence, flux) integrated in the line, the control system and the first characterization measurements of the main elements.

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Footnotes

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Yes

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