

Radiation Protection Study for the HIE-ISOLDE project

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The HIE (High Intensity and Energy)-ISOLDE is a project for a major upgrade of the ISOLDE facility which consists in the design and the construction of a superconducting linear accelerator associated to a high-power target. It will allow to increase the energy of the accelerated radioactive ion beams up to 10 MeV/u for the heaviest ions (compared to 3 MeV/u today) with an intensity of 15 kW.

The replacement of the REX post-accelerator by a new superconducting linac leads to different safety aspects, including radiation protection. X-rays, neutron emission and radioactive isotopes are the main sources of radiation hazards expected. The X-rays emitted by RF cavities have been identified as the main hazard, driving the shielding requirements. As a consequence, X dose rates emitted by RF cavities have been measured on a test-bench and Monte Carlo simulations using FLUKA have been performed to define the required shielding. The HIE-ISOLDE project as well as the status of the radiation protection study of the new superconducting linac will be presented.

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