Dottorato di Ricerca in Fisica

UNIVERSITÀ DI PAVIA
Dipartimento di Fisica

COLLOQUIA DI DOTTORATO, A.A. 2021/2022

Dipartimento di Fisica, Aula102

Lunedì 15 Novembre 2021 ore 17:00

Recent development on range monitoring in particle therapy

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Range monitoring techniques in particle therapy are needed in order to decrease the high dose exposure to the healthy tissue close to the tumour volume. Consequently, secondary radiation induced late effects should be reduced, which is demanding, especially in long-life expectancy patients as paediatric ones.
The beam range monitoring techniques are based on the detection of secondary particles produced in the nuclear interaction of the ion beam projectiles with the patient tissue nuclei, as charged fragments, produced by the projectile fragmentation, prompt photons, produced by nuclear de-excitations, and PET photons, produced by $\beta+$ emitters nuclei.
In this seminar, the fundamental aspects of particle therapy will be discussed, providing some examples of the current research activity on beam range monitoring techniques. The recent technique tested on patients at the CNAO center, based on the detection of secondary charged particles, will be presented together with a new device based on the detection of prompt photons, developed within a young researcher grant.

The seminar is in presence up to the maximum occupancy of A102 room.