FONDAZIONE BRUNO KESSLER

ECT*
EUROPEAN CENTRE
FOR THEORETICAL STUDIES
IN NUCLEAR PHYSICS AND RELATED AREAS

Development and characterization of the novel Hybrid Detector for Microdosimetry (HDM)

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Enrico Pierobon (University of Trento and TIFPA)

Abstract: Ion therapy has the potential to be a superior treatment for certain types of cancer and other diseases. However, to fully exploit this potential, it is important to overcome treatment uncertainties. One way to describe the radiation quality is through Microdosimetry, which records energy deposition at the cellular level, taking into account the non-deterministic nature of the energy deposition of ionizing radiation. To further improve the characterization of radiation field quality, a new quantity is proposed that replaces the "Mean Chord Length" approximation, used in standard microdosimetry, with the actual particle track length. To measure this new quantity, a two-stage detector, Hybrid Detector for Microdosimetry (HDM) is proposed. It consists of a commercial microdosimeter: Tissue Equivalent Proportional Counter (TEPC) and four layers of Low Gain Avalanche Detectors (LGADs) strips, in charge of particle tracking. HDM has been investigated and validated using Monte Carlo simulations and currently a dedicated readout is under development.

Disclaimer: The whole Trento academic community is invited to participate. However, since this space is dedicated to PhD students, we would like to maintain an informal and welcoming environment

General information:
The seminar will be held at ECT*, Villa Tambosi, Strada delle Tabarelle 286, Villazzano.
We are going to have a coffee break!
To reach Villa Tambosi: take bus number 13 from Povo (one leaves around 11) or bus number 6 from the city center. The bus stops is in front of the Villa.
In order to organize the coffee break we kindly ask you to confirm your presence through the google form that you can find scanning the following QR code:

Contacts: agnech@ectstar.eu - morresi@ectstar.eu - cconstantinou@ectstar.eu

Director of the ECT*: Professor Gert Aarts
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