FONDAZIONE BRUNO KESSLER

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

A proton computed tomography system for proton therapy

April 05, 2024 at 11:00

Elena Fogazzi | UNITN

A large portion of cancer patients worldwide receive radiation therapy during treatment. The interaction of ionizing radiation with biological tissues triggers a chain of chemical and biological events that end up with the death of the malignant cells. The high ballistic precision of a therapeutic proton beam is one of the main advantages of proton therapy compared to a conventional photon treatment, allowing to eradicate cancerous tissue while minimizing the irradiation of healthy tissue. To fully exploit this potential, it is crucial to have an accurate estimation of protons' range and interactions inside the patient. In this context, the key information is the proton stopping power values of the different biological tissues.
Our project proposes a novel method to directly measure the 3D stopping power map of the target volume through the proton computed tomography (CT) system recently developed in the framework of INFN-funded research projects, with the collaboration of the University of Trento and the Medical Physics unit of Trento Hospital (Trentino Healthcare Agency, APSS).
The system is working since 2018 and is currently installed at the experimental line at the Trento Proton Therapy Center. The imaging performances have resulted to be comparable with typical x-rays CT systems currently used in clinics. Based on that, a possible implementation of the proton CT system in the proton treatment planning workflow has been designed and proved. We are now planning to extend this tool to other European proton therapy centers through an upcoming experimental survey.

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 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 QR code.

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

Incoming Director of the ECT*: Professor Ubirajara van Kolck

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