

Press Release 2021

NEW NEUTRON CANCER THERAPY: THE COLLABORATION BETWEEN CNAO, INFN, MILAN POLYTECHNIC AND UNIVERSITY OF PAVIA GETS UNDERWAY



A new experimental neutron beam therapy will be developed in Italy through a collaboration between CNAO, National Center of Oncological Hadrontherapy, INFN, the Politecnico di Milano and the University of Pavia. A neutron beam accelerator designed for clinical research activity will be installed at CNAO for the first time in Italy. The goal is to target more precisely the cells of particularly complex tumours

The five-year agreement revolves around the neutron beam accelerator that will be installed at CNAO in 2024 and will be used to develop Boron Neutron Capture Therapy (BNCT), which involves irradiating cancer cells with neutron beams after having conveyed a drug containing an atom of a particular chemical element, Boron-10, inside them. The interaction between neutrons and Boron-10 results in the selective destruction of cancer cells and is expected to be very effective in fighting particularly complex tumours. Until a few years ago, the production of neutrons in sufficient quantity to trigger this process was only possible through nuclear reactors. Recent developments in this field have resulted in the small accelerator that will be installed at CNAO. This technology is made available by Tae Life Sciences, a U.S. company that has chosen to invest in Italian research. BNCT represents a new and further frontier in the application of physics to medicine in the context of CNAO, which is already one of only 6 centres in the world capable of using particle beams (carbon ions and protons) to treat inoperable and radio-resistant tumours. The collaboration will focus on initiating pre-clinical and clinical trials of BNCT and obtaining the CE mark certifying that the medical device meets the essential requirements for patient safety.