



INFRASTRUCTURES

ELIMED: THE FUTURE OF HADRON THERAPY IS BEING TESTED IN PRAGUE

Treating tumours with accelerated particle (ion and proton) beams using non-conventional high-power lasers and plasma technology: this is the scientific and technological challenge that will test the ELIMAIA

(ELI Multidisciplinary Applications of Laser-Ion Acceleration) infrastructure inaugurated on 27 November in Prague, along with its key component: ELIMED (ELI-Beamlines Medical and multidisciplinary applications), an experimental room that houses a beamline dedicated to the transport, selection and diagnostics of proton and ion beams, accelerated using high power lasers, which will be used for hadron therapy and radiobiological applications. The scientific objective is to verify the possibility of using protons produced by an unconventional laser source in the treatment of tumours. In fact, the Prague Centre will differ from current ones due to the production of particle beams that will be accelerated in plasma, rather than by particle accelerators, exploiting the interaction between laser and matter.

The implementation of ELIMED was made possible thanks to the experience acquired at the INFN Southern National Laboratories, where since 2002 the first Italian proton therapy centre (CATANA) is active and thanks to the skills developed in medical physics and in particular in hadron therapy by INFN researchers. The collaboration between LNS and the Czech Academy of Sciences dates back more than a decade and has been strengthened through the ELI consortium and the implementation of the ELIMED line. In 2014, INFN won the public tender for the construction of the room, successfully completing the supply of one of the most technologically advanced points of the entire infrastructure.

ELIMAIA will be fully operational starting from 2019 when it will open the doors to the international scientific community for multidisciplinary experiments in the fields of biology, medicine, chemistry, materials science, engineering and archaeology. ■