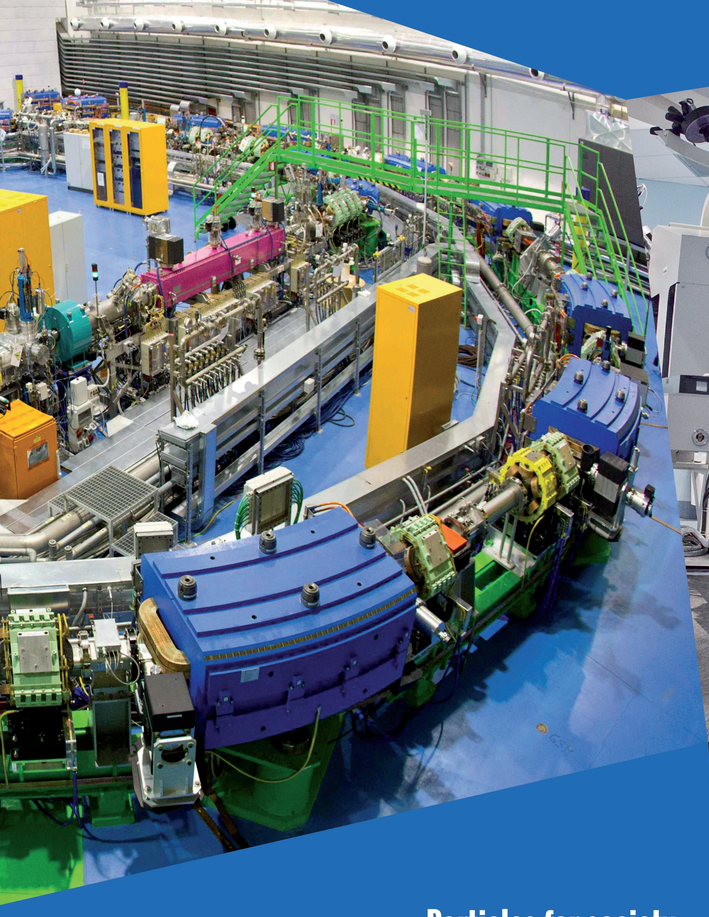

Particles for society

It is not surprising that the tools and ideas with which we explore the frontiers of the cosmos and matter also help us face challenges closer to everyday life.

To cure diseases, to communicate across the planet, to study and preserve works of art, to monitor the environment, we often use technologies and knowledge originating from fundamental research.

Particle accelerators, originally designed to study the smallest constituents of matter are now used in many hospitals for cancer therapies, for example. In Italy, INFN has contributed to build or set up and operate accelerators for these purposes, at the National Centre for Oncological Hadrontherapy (CNAO) in Pavia, the Proton Therapy Centre in Trento and the CATANA centre at its Southern National Laboratories.

Particle accelerators are employed to studies in cultural heritage or for environmental impact studies, in specific laboratories such as LABEC in Florence and LANDIS at the Southern National Laboratories, where they are used to date ancient artefacts or discover the composition of paintings without damaging them.

In addition, the need to analyse huge amounts of data and carry out complex simulations has led to a strong commitment to the development of methods and tools for big data management, computing and supercomputing, benefiting not only scientific research but also society.

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