

CNAO overview

CNAO is one of the four centres in Europe, and six worldwide, offering treatments of tumours with both protons and carbon ions. By the end of 2023 more than 4800 patients were treated at CNAO.

The CNAO synchrotron provides carbon ion beams with energies up to 400 MeV/u and protons up to 227 MeV in 3 treatment rooms and one experimental room open also to external users. The beam distribution in all the lines is based on active scanning and the maximum field size is 200 mm x 200 mm. Experiments at CNAO can benefit of the presence of an equipped biological laboratory.

The major upgrades ongoing of the facility are:

- 1) An additional ion source was installed and commissioning shall start soon. The new source will produce additional ions species and the first species for which an authorization was asked are He, Li, O and Fe.
- 2) A Single Room Facility for protons with a gantry will be installed in a new building next to the present one
- 3) An accelerator based BNCT Facility will also be installed
- 4) The research area will be expanded as well as the biology labs and rooms for small animals experiments will be made accessible

A carbon ion gantry will be a fundamental improvement of the facility and for that reason gantry design activities are ongoing in the framework of the HITRIplus and EuroSIG international collaborations.

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