Contribution ID: **28** Type: **Contributed**

The CNAO Synchrotron: Design, Operation and Organization

Wednesday 17 September 2014 11:50 (20 minutes)

Hadrontherapy offers an improved dose conformation to the target volume as compared to photon radiotherapy, with better sparing of normal tissue structures close to the target. In addition, carbon ions beams exhibit an increase of the radio biological efficacy, RBE, in the Bragg peak as compared to the entrance region.
The CNAO (National Center for Oncological Hadrontherapy) is the first Italian center for deep hadrontherapy. The main accelerator is a synchrotron capable to accelerate carbon ions up to 400 MeV/u and protons up to 250 MeV. Three treatment rooms are available and are equipped with horizontal beam lines; one of the treatment rooms also features a vertical treatment line to allow additional treatment ports.
The CNAO facility, has been designed for a completely active beam delivery system, in which a pencil beam is scanned transversely and the extracted beam energy can be changed on a spill to spill basis to obtain the best possible 3D dose conformation to the tumor.
The CNAO injector is composed of two ECR sources with a combined transfer line that brings the beam to a unique RFQ/LINAC system which accelerates the beam to 7 MeV/u for injection into the synchrotron.The commissioning of the synchrotron started in August 2010 and the first patient was treated in September 2011. Since then the clinical activities have been carried out on a regular basis and require regular availability of the beam in the treatment rooms.

Presenter: PULLIA, Marco Guiseppe (Fondazione CNAO)

Session Classification: Case Studies