Cyclotron Centre Bronowice, CCB – facility for proton therapy and applications

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Cyclotron Centre Bronowice with 230 MeV Proteus C-235 proton cyclotron, horizontal experimental beam for research, horizontal eye line and two dedicated rotating gantries is a part of the Institute of Nuclear Physics, Kraków, Poland. The cyclotron and the gantries were built by Ion Beam Applications S.A. (IBA), Louvain-la-Neuve, Belgium. The C-235 is the isochronic, 4-sectors proton cyclotron with conventional magnet coil of 1.7 - 2.2 T, 106 MHz RF generator, dee voltage between 55 to 150 kV peak, PIG with hot cathode ion source. The extracted proton beam energy is 230 MeV. The energy selector allows to use the semimonoenergetic proton beam in the energy range from 70 MeV to 230 MeV with decreasing current from the maximal 600 nA (at 230 MeV) to about 2 nA at 70 MeV. The experimental hall with the horizontal line is 95 m² large and 5 m high. 4 dedicated rooms (30 m² each) are available for preparation of physical and biological experiments. The horizontal eyeline, with 70 MeV proton beam (max .40 mm beam diameter, 10 Gy/s) was developed at the IFJ PAN and is used for treatment of eye-melanoma. Two sophisticated dedicated a with Pencil Scanning Beam (PBS)PBS gantries allow to irradiated with the scanning beam (spot size σ =2.7 mm to σ =6 mm for energies from 230 MeV to 70 MeV) within the full 0-360° range of angles. Each gantry is fully equipped in Patient Positioning System with robotic arm and anesthetic system. The CCB is used for experimental work since January 2013 and for patient treatment since February 2016.