Technology Infrastructure - IFJ PAN (Poland)

The Institute of Nuclear Physics Polish Academy of Science (IFJ PAN), originally established as a nuclear physics research laboratory over 50 years ago, has by now expanded its research over a broad range of interdisciplinary applications of physics and enjoys a privileged position in these activities. Along with its most up-to-date research activity in basic theoretical and experimental physics, the IFJ PAN has acquired several decades of experience in the studies of living systems and in developing technical devices and procedures useful in life sciences, medical diagnostics and cancer radiotherapy.

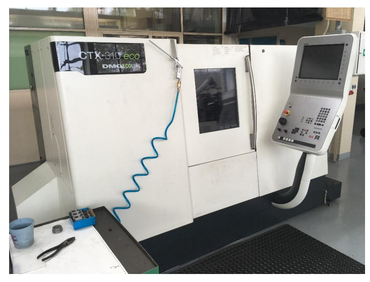
Engineering Experts

A team of 60 highly qualified engineers and technicians, which were involved or still are involved in many European scientific and technological projects. The Division of Scientific Equipment and Infrastructure Construction (**DAI**) was established in 2007. Since then, DAI has been involved in various large international projects as well as in those carried out at IFJ PAN. The experience accumulated by DAI and other technical staff of IFJ PAN fall into the following categories:

Assembly & installation of the systems: ATLAS, T2K, W7-X, SPIRAL 2, ESS
Quality Assurance: LHC, XFEL, ESS
Engineering & prototyping of mechanical and electronic/electrical equipment: LHC, T2K, W7-X, CTA, ITER, CCB, HiLumi-LHC, Pierre Auger Observatory SSD
Software engineering, LabView programming, web applications development: LHC, XFEL, ESS
FEM (ANSYS) calculations: CTA, ITER, W7-X, T2K

Machine park

Machine park includes mechanical and electronic workshops with a climate chamber. The workshop consists of several lathe, milling and many other CNC machines. The Division of Scientific Equipment and Infrastructure Construction (DAI) has also its own electronic laboratory. It is equipped with: Oscilloscopes, Programmable Power Supplies, Digital Multimeters, Data Acquisition Cards, soldering stations, sets of dedicated tools, and components. Machine park includes also the climate chamber. It is a useful device to provide the constant temperature and humidity for many applications. It has been used for tests of inorganic structures.


New experimental infrastructure

The new IFJ PAN infrastructure is under construction . The completion of the experimental hall is foreseen by the end of 2017. The infrastructure will serve for:

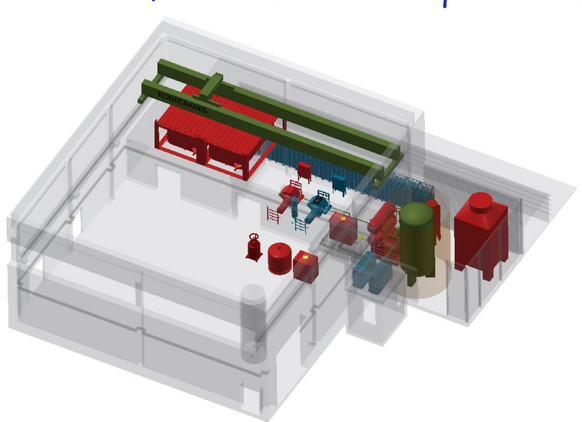
- accelerator physics & technology
- design and prototyping instruments for neutron physics
- beam diagnostics
- design, prototyping and testing of SC magnets
- superconductors technology

Parameters of the new experimental and research building:

- 300m2 of experimental hall with 20T crane
- 1000m2 laboratories and offices
- large vertical cryostat
- small mobile research cryostat
- new helium liquefier

HELIUM LIQUEFIER:

The IFJ PAN assures the liquid helium to in-site laboratories. The currently used helium liquefier efficiency is of order of 20 l/hour with LN2 precooling. The LN2 is also available in the institute for research at liquid nitrogen temperatures.



The IFJ PAN is under process of purchasing of new helium liquefier to assure the liquid helium for a newly build cryogenic infrastructure.

Cyclotron Centre Bronowice (CCB)

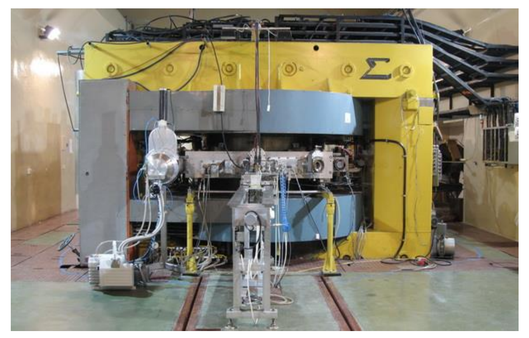
CCB - PROTEUS C-235

CCB offers a proton beam, produced by the C-235 cyclotron, for institutions and commercial organizations.

- proton beam with energy from 70 MeV to 230 MeV and intensity from 0.5 nA to 500 nA,
- experimental room with horizontal beam and with magnetic optical system enabling beam size adjustment,
- gantry facility, which enables sample irradiation from 0 MeV to 230 MeV using scanning beam (with σ=2.7 mm or σ=4 mm spot size) and at a selected angle within the range of 0 to 360,
- facility for irradiation with the use of horizontal beam with energy ranging from 0 MeV to 70 MeV; this facility gives a possibility of irradiation using Spread Out Bragg Peak, SOBP. Dose rate: from 0.01 to 1Gy/s,
- two separate rooms for biological samples preparation (material of animal and human origin).

CCB – AIC-144

AIC-144 cyclotron is used for the activation analyses of charged particles activation analyses. Irradiated samples and standards are subject of measurements by means of low-background gamma spectrometry directly or after radiochemical purification.



Institute of Nuclear Physics PAN (IFJ PAN), ul. Radzikowskiego 152, 31-342 Krakow, Poland; +48-12-662-8114; dai@ifj.edu.pl

Karol.Kasprzak@ifj.edu.pl