

**6 DEPARTMENT OF HIGH ENERGY PHYSICS**

PL0101360

Head of Department: Prof. Jan Nassalski (till Sept. 30)  
Assoc. Professor. Helena Białkowska (since Oct. 1)  
phone: (22) 621-28-04  
e-mail: Jan.Nassalski@fuw.edu.pl  
Lena.Bialkowska@fuw.edu.pl

**Overview**

The activities of the Department of High Energy Physics are centered around experiments performed at accelerators in the following laboratories:

- At CERN, the European Laboratory for Particle Physics in Geneva, Switzerland:
  - DELPHI at LEP  $e^+e^-$  storage ring is concerned mainly with the tests of the Standard Model, b-quark physics, gamma-gamma interactions and search for Higgs boson and supersymmetric particles
  - NA48 - studies of the CP-violation and rare  $K^0$  decays
  - SMC - Spin Muon Collaboration is investigating the spin dependent nucleon structure functions and the gluon role in the nucleon spin
  - NA49 and WA98 deal with heavy ion physics looking for possible effects of the phase transition to the quark-gluon plasma state
- At CELSIUS Storage Ring in Uppsala, Sweden:
  - WASA - a precise study of near threshold production of light mesons, and their decays.
- At DESY in Hamburg, Germany:
  - ZEUS - deep inelastic scattering of electrons and protons, proton structure functions, diffractive photon-proton interactions.

The groups of our Department participated in the construction phase of the experiments, both in hardware and in development of the software used in data analysis. Presently they take part in the data collection, detector performance supervision and data analysis.

The Department is also actively involved in the preparation of new experiments:

- CMS (Compact Muon Solenoid) and LHCb (b-quark production and CP-violation) at the LHC (Large Hadron Collider) at CERN,
- ALICE - experiment to study the heavy ion interactions at the LHC,
- COMPASS (Compact Muon and Proton Apparatus for Structure and Spectroscopy) at the SPS at CERN.
- WASA- 4 $\pi$  - commissioning of a new version of the WASA detector at CELSIUS in Uppsala,
- study of charge exchange processes in d-p collisions at Nuclotron in Dubna,

A small mechanical workshop is attached to our Department. It is involved in the preparation of the COMPASS experiment and participated in the construction of the prototypes for the alignment monitoring system for the Outer Tracker detector in the LHCb experiment.

Two of our colleagues work on the phenomenology of the quark-gluon plasma formation and of the low energy hadron-hadron reactions.

Several physicists from our Department are actively involved in science popularization by contributing articles to newspapers and preparing www pages with information about our activities.

We collaborate closely with the Institute of Experimental Physics of the Warsaw University in most of our experiments as well as take part in teaching and supervising diploma works. There is also a group of 10 PhD students.