

II. REPORTS ON RESEARCH

1 DEPARTMENT OF NUCLEAR REACTIONS



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Overview

In spite of reduced personnel the number of papers published and in press exceeded fifty, almost ten more than a year ago. Another good sign is the growing number of PhD students.

The following short reports cover the three major domains of our scientific activities: nuclear, material and atomic physics.

- Nuclear physics

The structure of light nuclei was investigated, and studies of nuclear reactions induced by heavy ions were performed including experiments at the Heavy Ion Laboratory of Warsaw University. The experiments were carried out in collaboration with scientists from the Institute of Nuclear Research from Kiev, Ukraine.

Proton induced reactions on zirconium were investigated theoretically by means of a multistep-direct model extended for the unbound particle - hole states. Good agreement with the experimental data was achieved.

Isospin effects in multifragmentation of relativistic heavy ions were studied by the ALADIN Collaboration.

Elements of a new generation detector PANDA were tested experimentally using a proton beam provided by the C-30 compact cyclotron at Świerk.

Evidence of a narrow baryon state was found in a quasi - real photoproduction on the deuterium target by the HERMES Collaboration.

- Atomic physics

Ionisation of selected heavy elements by sulphur ions was investigated in collaboration with the Świętokrzyska Academy, Kielce.

- Materials research

Hydrogen release from ultrahigh molecular weight polythene was investigated by means of an α - particle beam from the Van de Graaff accelerator of our Department.

Last but not least, many of our colleagues have been involved in education. Lectures on nuclear physics, accelerators, detectors used in nuclear research as well as nuclear methods applied in solid state studies for students from many high schools of Warsaw and for students of Warsaw University were given by Dr. Andrzej Korman and Dr. Lech Nowicki. Also, our Department made a significant contribution to the 7th Science Festival, an event organized regularly every year for the general public.