Contribution ID: **368** Type: **Plenary**

Modern nuclear physics research in radiation medicine

Friday 5 July 2024 10:00 (30 minutes)

Thanks to the studies of the structure of matter at the beginning of the 20th century and subsequent significant discoveries in particle physics, today people have a powerful tool in the form of ionizing radiation both for scientific purposes and for various sectors of the world economy. The development of radiation technologies has allowed nuclear physics methods to become firmly entrenched in human life and become an integral part of many areas of human activity. One of the most important such areas is the application of radiation technologies in medicine. The public's interest in radiation medicine is growing every year, as evidenced by the growth of scientific publications, radiotherapy centers, medical accelerators and other medical equipment based on ionizing radiation. However, with increasing interest, there is also increase number of tasks requiring modern nuclear physics research and new solutions to further improve the effectiveness of radiation technology. For example: in the field of radiation therapy, it is necessary to improve the efficiency of irradiation on electron and photon beams, as well as new methods of dosimetry on medical accelerators, in the field of radiation diagnostics, it is necessary to improve image quality and its automatic processing (removal of artifacts, segmentation, etc.), in the field of medical radioisotopes, research is underway in terms of obtaining radioisotopes in new ways. The question of the effect of ionizing radiation on structural changes in the blood is no less important. It is also necessary to study the biophysical aspects of radiation treatment of food products, since human health directly depends on the quality of food consumed. Currently, all of the above-mentioned studies are conducted all over the world, including in the Department of Nuclear Physics Methods in Medicine and Industry of the Moscow State University Research Institute of Nuclear Physics.
Thus, this report is devoted to modern nuclear physics research in radiation medicine, which is a key aspect of the successful application and development of this field.

Section

Primary author: Prof. CHERNYAEV, Alexander (Department of Physics, Lomonosov Moscow State University)

Presenter: Prof. CHERNYAEV, Alexander (Department of Physics, Lomonosov Moscow State University)

Session Classification: Plenary