

Further development of methods, technologies, schedule modes and delivery of radiotherapy-The theme 1132

Research and significance in the presented project are innovative of the soundness of the challenge of the scientific program as Medico - technical and clinical research for the treatment of cancer patients with beams of heavy nuclear particles of the JINR Phasotron and successive diagnostic, which JINR provides the first time in Russia and Eastern Europe. The JINR is the leader in Russia in the field of proton therapy, with the patient capacity of approximately 100 people per year, is the leader that is a successfully applied method of conformal 3D irradiation of deep-seated tumours, when dose distribution is precisely localized to the target shape.

Achievement of the solvers in the group is precious specialists in the field of radiotherapy, radiobiology, and the technology of proton therapy. The scientific and technical impact of this research is on an excellent level and the measures maximizing the impact of the project will require future independent research based on using JINR's facility. The potential for the innovations versus risk levels is correlated to the team experiences. The main purpose is also the development of therapeutic method and the device for protection against radiation of biological objects. The results from this research are obtained with the assistance of radiobiology, using the technique of proton radiation facilities. These results will be also making for better use and application of therapeutic facilities since it regards obtaining the worldwide level of the research results in the laboratory of JINR. The researchers in the presented group planned to improve the acceleration of the statistical analysis of the results of proton therapy clinical studies on the irradiation of patients with different diagnoses, in the development and upgrade of proton therapy methods and Dosimetry and microdosimetry of therapeutic hadron beams and the activities are measured the LET of clinical proton beam of DLNP Phasotron with Si detectors Liulin and Medipix. Of course, the groups are involved in radiobiological studies. The project meets all the required criteria for the scientific publishing of originating results, qualified processes of doctorate study, and stands for the full-time equivalent of the workload of researchers, engineers, technicians, laboratory assistants, and young people. It means that the human resources of the laboratory are in the good condition with adequate experiences and past achievements in this research field, which were demonstrated by scientific result competencies.

The investigative model, tools, and methods of the project are realistic for resolving this proposed problem and the requested funding is realistic for the estimated budget. It includes clear overall responsibility of all staff resources for the activities.

Research of such problem requires a wide range of the main methods from technical solutions, development of the proton therapy physical methods, and the methods of radiobiological studies. They are the result of a collection of clinical trials and experiences for further research of medical beams at the JINR. The planned timetable of works and resource-leveling the information demonstrates the proposal on an adequate level of experience with the special preparation of the scientific group in this research field.

Within the ranking scheme in the Questionnaire for the extraordinary session, I propose positively categorized this project to A as an excellent project, which must be encouraged to continue during the next years and expand its scientific impact.

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