

Review of the proposal for extending the project
"Novel semiconductor detectors for fundamental and applied research"
(Project leader – G.A.Shelkov)

X-ray radiation plays a key role in scientific research, medicine, and numerous technological applications. Therefore, the development of novel X-ray detectors is an important direction of nowadays research. In particular, pixel-type solid-state detectors operating in single-particle counting mode gain popularity and are the topic of the present proposal.

The proposal is a continuation of the scientific theme 04-2-1126-2015/2023, which was successfully realized during 2015-2023 and led to a number of significant experimental results and achievements, including 22 publications in scientific journals, 3 patents, 19 master's degrees, and 3 doctoral theses.

The project team is highly qualified and has a long-term experience in international collaboration and activities within the Medipix Collaboration. The accumulated knowledge and experience will make a solid background for further R&D activities of the team.

This project aims to create hardware and software components for the development of detection systems based on novel energy-sensitive hybrid pixel detectors and radiodiagnostic equipment based on them. In particular, the proposed activities will mainly focus on the development of the in-house microchip and the manufacture of new energy-sensitive semiconductor X-ray image detectors and devices for:

- creation of a hardware-software basis for the development of new types of X-ray devices for medical diagnostics, including computer tomography;
- improvement of methods of identification of substances in radiographic research using the information about the measured energy of gamma-rays.

The proposed extension of the project is actual and can be successfully implemented, its financial costs are justified. Therefore, I recommend the project for full support and a five-year extension.

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