

Review of proposal the extension of the project
" Novel Semiconductor Detectors for Fundamental and Applied Research".
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The main interest of X-ray application in any experimental researches as well as industrial equipment is an opportunity of registration efficiency studying. The era of X-ray film usage (started with first Rontgen) is in the past. Nowadays two-dimensional detectors based on semiconductor matrixes are being used for various applications. For known reasons there is the development gap and especially in production of such detectors in our country. Natural way to reduce the отставание connected with an international cooperation. The authors of the project have positive experience of collaboration work. They have completed the international project together with "Medipix" collaboration. The project was supported by Ministry of Education and Science of the Russian Federation. That made it possible to gain access to the technical documentation, which is necessary for conducting their own development using such recording systems based on the latest chip in this series - Medipix4. The important results in spacious and energy resolutions of the developed prototypes were gained under this already completed project. That stage was important for further detectors practical applications. The results of the project are well known in Russian and foreign scientific communities.

The most important planned results of the new project should include the development of a computer medical tomograph (MT) prototype based on hybrid pixel detectors, including the creation of a complete set of software for controlling the operation of the MT, processing and visualization of the scan results. At the same time, the use of multilayer pixel detectors Si/GaAs and Si/GaAs/CdTe, which are being developed as part of a new project, will significantly increase the information content of traditional computed tomography (CT) data, limited due to the use of polychromatic (bremsstrahlung) radiation. This will be achievable exactly through the use of multilayer detectors, where each of the layers has its own spectral sensitivity.

It should also be noted that the expected spatial resolution of the tomographic setup, which with the possibility of projection magnification, can be on the order of 1-3 microns, is quite consistent with the modern world level.

In conclusion, I want to point out the prospects of this project for other areas of science and technology, such as various diffraction experiments with time resolution, X-ray astronomy, as well as all kinds of non-destructive testing instrumentation. In the light of the above, I certainly support this project and consider its implementation important for solving various scientific and technical challenges in the Russian Federation.

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