Brief information about the project

Name of the project	AP14972943 «Numerical study of astrophysical effects of the nonlinear theory of vacuum electrodynamics»
Relevance	The project is aimed at a numerical study of the interaction of electromagnetic radiation with superstrong magnetic fields in its various configurations created by compact objects, where the effects related to the nonlinear theory of vacuum electrodynamics and the effects of the general theory of relativity play an essential role.
Purpose	Numerical study of the distribution of angular deviations of electromagnetic radiation that has passed through superstrong magnetic fields of various configurations within the framework of nonlinear theories of vacuum electrodynamics and general relativity.
Objectives	1. Numerical study of the interaction of electromagnetic radiation with a uniform magnetic field in flat space-time within the framework of the nonlinear theory of vacuum electrodynamics. 2. Numerical study of the interaction of electromagnetic radiation with a dipole magnetic field in flat and curved space-time within the framework of nonlinear theories of vacuum electrodynamics. 3. Numerical study of the interaction of electromagnetic radiation with a quadrupole magnetic field in flat and curved space-time within the framework of nonlinear theories of vacuum electrodynamics
Expected and achieved results	The angular distributions of electromagnetic radiation interacting with a superstrong magnetic field of different configurations (uniform, dipole, quadrupole configurations of the magnetic field) will be determined within the framework of the nonlinear theory of vacuum electrodynamics and Einstein's general theory of relativity.
Research team members with their identifiers (Scopus Author ID, Researcher ID, ORCID, if available) and links to relevant profiles	1. Khassanov M.K., PhD. H-index – 2, Researcher ID ABA-7250-2020, ORCID: 0000-0001-9857-0658, Scopus author ID: 57204019721. 2. Abyshev M.E., d.p.-m. s, prof. Индекс Хирша – 6; Researcher ID L-4467-2018, ORCID: 0000-0003-3602-6934, Scopus Author ID: 26530759900.
List of publications with links to them	Beissen N., Yernazarov T., **Khassanov M.,** Toktarbay S., Taukenova A., Talkhat A. Bending of Light by Magnetars within Generalized Born–Infeld Electrodynamics: Insights from the Gauss–Bonnet Theorem // Symmetry. – 2024. – № 16(132). DOI 10.3390/sym16010132.
Patents	-