

## **Abstract**

To the bachelor diploma work Shkarban Elena Vadimivna

Theme: Mirror lens focal system for thermal imager

The purpose of this dissertation is to develop a mirror-lens afocal nozzle for a thermal imager with a fixed lens that allows the thermal imager to have two values of the angle of view. The theme of the work and the content of the technical task is determined by the tasks that are solved in the research work with state registration №0118U003751 and in accordance with the requirements of the technical task GDR №2116-p NTUU "KPI them. Igor Sikorsky ", so the topic is relevant and of considerable practical importance.

The first section provides an overview of mirror and mirror-lens afocal systems in thermal imagers.

In the second section, the structural and parametric synthesis of the mirror-lens afocal system with a given value of angular magnification and the outlet pupil taken outside the system is carried out. The positioning of the original pupil was achieved by constructing an apocal system of the Kepler type system, but with a Gregory mirror lens that provides a direct image of the objects. The lens part of the system is constructed according to the scheme of the Huygens eyepiece.

The third section provides an analysis of the effect of design parameter deviations from their nominal values on image quality and the justification of tolerances on design parameters. The analysis showed that the optical system of the afocal nozzle is technological.

In the fourth section the startup project "Mirror-Lens Afocal System for the Imaging Imaging" was developed.

The total amount of work: pages, figures, tables, bibliographic names.

Keywords: mirror-image aococcal nozzles, thermal field vision, vision of the field of vision, apocal nozzles according to the Mersen scheme.