

## **Annotation**

During the writing of the diploma project the methods of non-destructive testing used to determine defects in ferromagnetic materials were considered, as well as their advantages and disadvantages were analyzed. A flaw detector based on magnetoresistors was designed, which uses the basic principles of the magnetic method of non-destructive testing. The calculation of the parameters of the designed device is carried out, the algorithm of data transfer is made.

Purpose: analysis of effective methods of non-destructive testing to identify defects in complex objects and construction of a device for their location.

Object of research: methods of non-destructive testing of complex surfaces.

Scientific novelty: a compact device for finding defects based on the excitation of the magnetic field.

The diploma project consists of an explanatory note of 46 pages, includes 29 illustrations, 4 tables, 4 drawings, 11 references and 37 formulas.

Keywords: magnetic non-destructive testing, magnetoresistors, I2C, SPI, USART, magnetic flux leakage, microcontroller, serial data transmission protocols.