

## ABSTRACT

The master's dissertation consists of 4 sections, 75 pages, contains 18 illustrations, 29 tables, was processed 28 sources.

Relevance of the topic: The main task of the development of ultrasonic flaw detection is to increase its spatial resolution, which depends on a number of characteristics of the flaw detector and the wavelength used to control oscillations. This problem can be solved in two ways: the use of ultrasonic oscillations of higher frequencies (decrease in wavelength) and the use of focusing oscillations, which leads to an increase in resolution due to the increase in acoustic pressure in the focal zone.

The purpose of the study: the development of an ultrasonic automatic high-resolution control system. On the basis of the literature review the analysis of modern systems of ultrasonic control, their application and the principle of action is carried out. The problem of low resolution in solid materials is revealed.

Object of research: the process of ultrasonic control of defects in steel materials.

Subject of research: a method of increasing the resolution of the ultrasonic system.

Scientific novelty: increase of spatial resolution due to phase selectivity of echo signals reception

Practical value: calculation of geometric dimensions - radii of concentric elements of the phase-controlled converter system.