

## Summary

Diploma project dedicated to the development of ultrasound systems, products of thickness of structural ceramics.

Volume degree project 68 pages, it includes 42 figure, 2 tables, 12 references, 6 applications.

Keywords: ultrasound, ultrasonic thickness measurement, phase shift, Hilbert transform, r-statistical phase characteristics.

The object of study is the ultrasound system of thickness, the subject of research - modeling and block diagram r-statistics, signal processing program.

The degree project consists of an introduction, eight chapters and annexes.

The introduction substantiates the relevance of the chosen topic describes the goals and objectives of development. The first section is devoted kinds of structural ceramics and its physical and mechanical properties. The second section is devoted to types of thickness measurement method. In the third section describes the rationale for the choice method of obtaining the sample values of phase characteristics of the signal theory of discrete Hilbert transform digital signals, defining r – statistics time delay for signal and system simulation using MatLAB. In the fourth chapter is to study the impact of aperture window at level r - statistics for noise signal. The fifth section is devoted to the development of structural and functional schemes calculate acoustic and electroacoustic tract. In the sixth chapter describes the selection and calculation of circuit assemblies electric concept. In the seventh section calculates the scanner. The eighth chapter dedicated to calibration and calculation errors thickness measurement.

In applications contains source code modeling treatment r - statistics description of the scanner engine program determining the frequency HZI, structural, and functional electric concept, the algorithm of the system sensor assembly drawing, assembly drawings scanner and its kinematic scheme and detailing.