

## **Annotation**

In this work, an ultrasound device was developed to measure the speed of blood flow, in particular in the vessels of the upper extremities.

The thesis project consists of an explanatory note with a volume of 63 pages, includes 30 illustrations, 4 tables, 3 drawings and 14 literary sources.

The aim of the project is to develop an ultrasound device for measuring the speed of blood flow in the vessels of the upper extremities by continuous Doppler.

In the first chapter, an analytical review was conducted, which included the study of the features of ultrasound propagation in biological tissues, factors that can influence research results, consideration of non-destructive testing methods, the Doppler effect, and the main methods of Doppler imaging.

The second section includes calculating the size of the piezoelectric element and selecting the operating frequency, on the basis of which the acoustic path was calculated and the emitter voltage was determined.

In the third chapter, a block diagram was designed and the principle of operation of the device was described. Based on this, the elements of the electrical circuit were selected and calculated. Finally, an ultrasonic sensor was developed based on calculations of its basic dimensions.

Key words: ultrasound, Doppler effect, Doppler, piezoelectric transducer, blood velocity measurement.