

*A Andreeva, Marina Burova.* PULSED ULTRASONIC IMAGING BY CONVOLUTION OF THE FOURIER TRANSFORMS OF TRANSMITTED THROUGH ELEMENTARY SUB-OBJECTS ACOUSTIC FIELDS

An object is illuminated with short acoustic pulses. The amplitudes of the transmitted through the separated elements (simple forms, constructing the object) acoustic pulses are registered by a scanning with ultrasonic transducer. The transmitted acoustic pulses through the simple forms are separated in time because of the path difference. The Fourier transformation of the digital data of each amplitude field (the transmitted acoustic pulses through the corresponding form) is performed by a computer program. The Fourier transformations represent Fourier images of the separated simple forms. The profile of the object longitudinal section is reconstructed on the basis of the convolution. The image profile is obtained from the reverse transformation of the convolution of the Fourier transformations. It is shown that image reconstruction is independent of the number of the simple forms.

**Keywords:** Fourier transformation, convolution, deconvolution, ultrasonic imaging, reverse transformation

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