

Research of Piezoelectric Adders for Vibroacoustic Physiotherapy

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Vibroacoustic physiotherapy – the one of types of vibrotherapy, at which, for the therapeutic and prophylactic purposes a contact effect of microvibration with sound frequency (20 Hz – 20 kHz) is used. Most frequently the piezoelectric transducers are used as the projectors.

As is well known, due to the inverse piezoelectric effect upon the application of a sinusoidal electric field can appear forward and backward traveling waves of displacement, strain and stress that in the steady state produce a standing wave. Naturally, if we initiate in the solid state of piezoelectric element several traveling waves, by applying the principle of superposition, we obtain the algebraic addition of energy flows at each point of the excited volume.

The output signal from the piezoelectric element, which due to the direct piezoelectric effect is induced charge is proportional to the total value of the mechanical stress acting in the region of the electrode.

The one of the constructions of the piezoelectric adder, and the oscillogram of piezoelectric adder output are shown in Fig. 1.

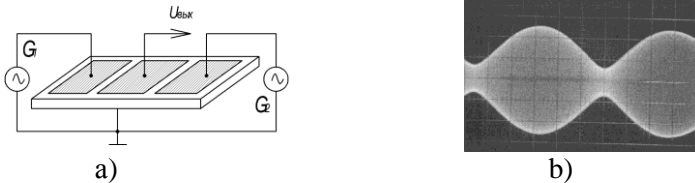


Fig. 1 – Design of the adder (a) and oscillogram of the piezoelectric adder output (b)

In the work the issue of piezoelectric transducers using for vibroacoustic interferential therapy is considered. Interference of waves in the piezoelectric transducer is investigated, constructions of piezoelectric transducers for vibroacoustic interferential therapy are offered.

1. Sharapov V., Sotula Zh., Kunickaya L. *Piezo-electric Electro-Acoustic Transducers*. Springer Verlag, 2013.