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PROPERTIES OF BLEUSTEIN-GULYAEV WAVES IN $\text{Li}_2\text{B}_4\text{O}_7$ CRYSTAL*

Lithium tetraborate ($\text{Li}_2\text{B}_4\text{O}_7$) crystal belongs to the 4mm class of the tetragonal system. Bleustein-Gulyaev wave (BGW) exists in this class if the propagation direction is perpendicular to the [001] axis and this axis is parallel to the propagation plane. To determine the BGW parameters, a delay line, which consisted of two identical, uniform, double electrode interdigital transducers (IDT), was designed, fabricated and tested. At the fundamental frequency (102.4MHz), the passband response was deformed by surface skimming bulk waves. Much better response was obtained at the third space harmonic. From the known IDTs parameters, and from the measured center frequency (307.2MHz) and insertion loss (-18.5dB) at the third harmonic, the BGW velocity and the square of the electromechanical coupling coefficient were determined as 4915 m/s and 0.0024, respectively. The temperature coefficient of time delay is equal to 10 ppm/K. High velocity, low level of spurious signals at the third space harmonic, low temperature coefficient of time delay and reasonable coupling, make the BGWs in $\text{Li}_2\text{B}_4\text{O}_7$ crystal very promising for high frequency filters and chemical sensors applications.

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**RELATIONSHIPS BETWEEN RESISTOR COMPOSITION
AND ELECTRICAL PROPERTIES OF ALUMINA
AND A DIELECTRIC**

The paper describes the behaviour of the ITME thick film resistor series R340 when printed and fired onto standard 96% alumina substrates and onto a dielectronic film also manufactured at the Institute. It is observed that the behaviour of the lower members of the series is less reproducible than that of the remainder on both surfaces. An analysis of the effects of thermal aging shows that the time dependence and the estimated activation energy of resistance drift of all members have markedly different characteristics on the two surfaces. The results show a marked similarity to those observed previously and suggest that interdiffusion of phases may have a major role in the disparity in performance between the substrates.

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