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Finite Element Modelling for Fault Detection in Medical Ultrasonic Transducers

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The paper examines simulated signals produced by a simplified fifteen crystal medical ultrasonic transducer operating in air. Transmission and reception properties of the transducer are investigated through various faults to backing, crystal, matching and lens layers of the transducer. The finite element simulation study demonstrates four fault-related changes in transducer behaviour can be observed in the in-air reverberation image pattern. This approach may help to provide earlier detection of transducer faults, so reducing the risk of fault-positive and fault-negative diagnosis due to poor image quality.

Ключевые слова:

Содержание.

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