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The effects of transducers on the time reversal process in solids

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Every experimental implementation of Time Reversal (TR) involves the use of transducers to convert wave motion, whether mechanical or acoustical, into electrical signals, and vice versa. Practical considerations of transducers are not included in the basic theory of time reversal, which is based on idealized point-like sources. These considerations include temporal ring down at a narrowband transducer resonance, the finite size of the transducer giving rise to directivity, and the impedance contrast between the transducer and the medium. The effects of these considerations on the TR process will be characterized by presenting data from various TR experiments.