

## **Revisiting Time Reversal and Holography with Time Transformations**

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Because time and space play a similar role in wave propagation, wave control can be achieved or by manipulating spatial boundaries or by manipulating time boundaries. Here we emphasize the role of time boundaries manipulation. We show that sudden changes of the medium properties generate instant wave sources that emerge instantaneously from the entire wavefield and can be used to control wavefield and to revisit the holographic principles and the way to create time-reversed waves. Experimental demonstrations of this approach will be shown on water waves and the extension of this concept to acoustic and electromagnetic waves will be discussed. More sophisticated time manipulations can also be studied in order to extend the concept of photonic crystals and wave localization in the time domain.