# Focusing of time reversed random coda

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**Abstract**

In this talk, we consider a problem of refocusing of acoustic energy on a passive target. This is important in applications such as noninvasive destruction of a kidney stone located inside a patient. We show that a standard solution that involves illumination of the target with a pulse followed by back-propagation of the coherent reflection does not result in tight refocusing. We propose instead to make use of the super-resolution property of acoustic time reversal in a random medium by placing a patient on a layered medium, activating the target with a pulse and back-propagating the random reflections generated by the layered medium. This process results in refocusing of energy on the target with a resolution superior to that of the back-propagated front. We present a theoretical setup and numerical simulations in support of the proposed method.