

## ACOUSTICS2008/683 Time reversal elastography in soft solids

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One channel time-reversal (TR) experiments allow focalization of waves in reverberant cavities. According to Rayleigh criteria, the focal spot width is directly related to wavelength and therefore depends on the mechanical properties of the medium. Thus the general idea of this work is to extract quantitative estimations of these mechanical properties from TR experiments. They were performed inside 3D soft solid cavities (gelatin based phantoms). An external source creates mechanical waves in the audible frequency range and one component of the vectorial field is measured as function of time by ultrasonic techniques developed in elastography. The wavelength information of shear waves, that dominates the vectorial field, is deduced from TR experiments. The advantage is that the technique works with sources of any shape and with any time dependence. This robustness as regard to shear wave source allows to think about many applications in the medical field, including deep or moving organs. Examples of elasticity image will be shown in inhomogeneous soft tissues.