

**ACOUSTICS2008/3373**  
**Time reversal use in detection of buried cracks**

Pierre-Yves Le Bas, Brian Anderson, Michele Griffa, Tj Ulrich and Paul Johnson  
EES-11 (Geophysics) - Los Alamos National Laboratory, MS D443, Los Alamos, NM 87545, USA

Time Reversal has the potential to become a powerful tool in non-destructive evaluation. Coupled with nonlinear properties of cracks in a technique known as Time Reverse Nonlinear Elastic Wave Spectroscopy (TRNEWS), it provides the means to detect defects in complex structures. This experimental study explores the capabilities of TR to focus energy inside a 3D medium in order to activate nonlinear features or defects. Special attention is given to buried cracks. The current challenge is introducing sufficient energy in order to excite the buried feature and produce nonlinear scattering. We will provide an overview of the problem.