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Numerical analysis of reflection and transmission phenomena of nonlinear ultrasound wave

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Abstract: Numerical analysis of the reflection/transmission problem for a non-linear acoustic wave is studied. The wave is a plane wave and it is incident normally on the plane discontinuity surface between two lossy media. Numerical calculations are proceeded with the help of self written software (in Fortran). The influence of different propagation parameters (properties of two different media) on the reflected and transmitted wave fields are discussed. Particularly, it is shown that although two media have the same impedance, the effect of the propagation nonlinearities is still existing in the reflected and transmitted fields. The performed analysis qualitatively confirmed theoretical predictions quite well.

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