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Multiscale Analysis of Scattered Elastic Waves Based on the Lippmann–Schwinger Equation

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There has already been vast literature concerning scattering of elastic waves. It is still questionable, however, that how a small scale fluctuation of a wave field influences scattering of waves. In this paper, a method for the multiscale analysis is developed for scattered elastic waves by means of the Lippmann–Schwinger equation. The multiscale decomposition of the solution of the equation is carried out by using a scaling function and wavelet of compact support. Numerical calculations are performed to examine the scale effects of fluctuation of a wave field on sacttering of waves. The numerical results show that the small scale solution has also a significant role as the large scale solution has.

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