# High-frequency homogenization for elastic wave propagation in random layered media

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In this oral presentation, we present homogenization techniques applied to the problem of elastic waves propagation in horizontally stratified media. This generalizes the acoustic case (SH waves) presented in [2] to the two-mode (P and SV) transfer matrix. We also consider transverse isotropy that is more general than the hypotheses made in [3] and any angle of incidence unlike in [1]. Thanks to physical properties and Lie groups algebra, the equations can be much simplified, however, the difficulty of the P-SV case lies in the couplings. We will show stochastic homogenization at weak or strong regime, when the standard deviation is sufficiently small compared to the wavelength and sufficiently small compared to the slab size.

[1] M. Colvez, R. Cottereau. *High frequency attenuation of elastic waves transmitted at an angle through a randomly-fluctuating horizontally-layered slab.* Wave Motion, 2023.

[2] J. P. Fouque, J. Garnier, G. Papanicolaou, K. Solna. *Wave Propagation and Time Reversal in Randomly Layered Media*, vol. 56. Springer Science and Business Media LLC, 2007.

[3] W. Kohler, G. Papanicolaou, B. White. *Localization and mode conversion for elastic waves in randomly layered media i and ii.* Wave Motion, 1996.

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