

Cross terms of ground transfer function -generalization of Normalized Energy Density-

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Normalized energy density (NED: Goto et al., 2011) is one of the essential quantities for a ground transfer function of a 1D layered structure model. This quantity is regarded as a type of norm for the power of the ground transfer function. The cross term of the functions is defined as an extension of the NED. The cross term is physically defined as the correlation coefficient between the two ground transfer functions. The cross term detects the harmony of two transfer functions; a finite value is obtained only in the case where peak frequencies coincide. The properties of the cross term is analytically proved for a two-layered case and numerically shown for three- and four-layered cases.

Reference

Goto et al., Conserved quantity of elastic waves in multi-layered media: 2D SH case -Normalized Energy Density-, Wave Motion, 48, 602-612, 2011.

Goto, Fundamental property of cross terms of ground transfer function, Wave Motion, submitted.

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