Propagation of Lamb Waves on an Immersed Plate Containing a Periodic Grating: Experimental study

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Abstract : In this paper the propagation of Lamb waves in an aluminum plate with a roughness on only one side is studied. The interaction between the incident Lamb wave and the grating gives rise to reflected converted waves. This phenomenon is studied experimentally in the case of an immersed plate in water. Our objective is to show that retroconverted waves radiating into the water are detectable although their energies are small. The damping coefficient of the propagating Lamb wave in the plate is evaluated. Preliminary numerical simulation by using a finite elements method is performed in order to help experiments.

Keywords : Liquid–solid interfaces, Rough plate, Periodic grating, Lamb waves, Converted modes