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**Experimental study of lamb mode conversions at the junction of
two joined plates**

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In this study we are interested in a welded junction of two plates. Plates have the same thickness and are joined along their edges. Some previous theoretical studies have shown that guided Lamb waves are suitable for the characterisation of the interface between two plates [C. Scandrett and N. Vasudevan & M.V Predoi and M. Rousseau]. In a first time a junction perpendicular to the plates is experimentally investigated. Aluminium, copper and steel plates are used. Incident S0 Lamb wave is excited by a contact piezocomposite transducer and the surface displacements of the plate are detected by use of a laser vibrometer on both side of the junction. Converted waves are observed. From the measured normal surface displacements, reflection and transmission energy coefficients of the incident S0 wave through the junction are calculated. These coefficients are in a good agreement with the theoretically predicted ones. In a second time, the studied junction is not perpendicular to the plate. Experimental results are presented and compare to numerical ones obtained with the Comsol® Finite Element code.